MAYA ARCHITECTURE

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PLATE LXXXVII—*Frontispiece*

DETAIL.

PALACE OF THE GOVERNOR.

UXMAL.

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MAYA ARCHITECTURE

By

GEORGE OAKLEY TOTTEN

A. M., A. I. A., S. B. A. A.

Member Maya Society

Honorary Member and Medalist of the
Societé Centrale d'Architecture de Belgique

Honorary Member
Societé Centrale d'Architecture Espagnole
and
Societé Imperiale des Architectes Russes

Member, Permanent Committee
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MEDAL AWARDED THE
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AT THE 1923 SALON
FOR HIS EXHIBITS OF PHOTOGRAPHS
MODELS, DRAWINGS AND MUSEUM DESIGNS
OF
MAYA ARCHITECTURE

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BY
GEORGE OAKLEY TOTTEN

PRINTED BY
W. F. ROBERTS COMPANY, INC.,
WASHINGTON, D. C.

To my Sons,

GEORGE OAKLEY TOTTEN, 3rd

and

GILBERT VON POST TOTTEN

this book is affectionately

DEDICATED

MAYA

LONG have we sought to be inspired by ancient Greek and Roman art—the heritage of Europe.

All unaware that buried deep in the dark jungles of our southern lands there lie vestiges of a half-forgotten race, a race that ran its course and died—a race inspired by mighty Kukulcan to build the noble temples of Copan—Mother City of the Mayas.

But art eternal never dies.

So in the rebirth of this wondrous people new cities sprang to life—Chichen Itza, Uxmal and Mayapan.

The embers of the dying fire were fanned to life and art once more flamed forth to their eternal glory.

Then death again did claim its toll, and once more Maya art was dead.

Not dead, but only slumbering, to be awakened by a young and vigorous people of the North; their privilege it shall be to take up the work where Maya left it off, and carry on.

The Second Renaissance has just begun.

O! Great Kukulcan, make clear to them their heritage sublime and inspire them to nobler ideals than Maya ever dreamed.

105506

West Falmouth Mass.
October 27. 1925

My dear Major Totten:

I wish to heartily thank you for the opportunity that you gave me to see your beautiful, artistic, and at the same time accurate in coloring. re production in drawing of the famous Temple of the Jaguars in the ruined city of Chichen Itza. Yucatan.

I am willing to have on record the statement that I belive the coloring of these drawings to be as accurate as one can hope to make them; as they probably were when applied by the ancient artists in the dim past

Very Sincerly Yours

Edward Herbert Thompson

Measured and drawn by George Oakley Totten.

5 Feet

FRONT ELEVATION
TEMPLE OF THE TIGERS
BALL COURT
CHICHEN ITZA

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THE MAYA AREA.

INTRODUCTION

ARCHITECTS have ever been in search of new material and new sources of inspiration. We Americans have scoured the ends of the earth in search of something different and we have overlooked a vast fund of material at our very doors.

The Maya civilization and still more wonderful architecture, heretofore so little known in the United States, is now every day referred to in the public press, owing largely to the awakening of the general interest in the study of archæology and to the recent excavations of the Carnegie Institution and Tulane University.

My own interest in Maya art was aroused in 1919 when a client asked me to design a museum for his collection of American Indian Curios. Through the kindly advice and assistance of Dr. W. H. Holmes, Director of the National Gallery of Art, I began a serious study of the subject. So interested did I become that shortly afterward I decided to go to Yucatan and get my information first hand.

The journey is a very delightful and easy one from any of the eastern states, and there are several routes one might take.

I sailed from New York on a very fine ship, The Mexico, and after a voyage of seven days including an interesting one spent in Havana we arrived in Progresso, the only seaport in Yucatan. Merida, the capital, thirty miles inland, is a town of 100,000 inhabitants, of quaint Spanish-Colonial architecture, with picturesque little parks beautifully laid out and well kept and filled with tropical plants and many varieties of palm trees. A large part of the population is Maya-Indian or "Mestizo". The Indians, while resembling in physiognomy our Northern tribes, have softer features and more intelligent faces; they, too, have the straight black hair.

The ruined city of Chichen Itza is located about 100 miles from the Capital. It is reached by a railroad journey of a few hours to Dzitas, the nearest point to the railroad. The ruins are 20 miles farther. Dzitas is a town of but a few houses and two or three small shops and contains a garrison of rural police. These men are from the City of Mexico and, I was told, are gathered from the riff-raff of the Mexican Army. They are so well armed that they resemble our youthful ideas of bandits. The trail led nearly the entire distance through a dense jungle and as we started late in the afternoon it was long after dark before we arrived. Recently the jungle trail has been widened into a road which makes the ruins still more accessible.

My first view of El Castillo, the great pyramid of Chichen Itza, was by moonlight. It was wonderfully impressive and full of mystery.

An old hacienda owned by Mr. E. H. Thompson is located about a mile from the ruins and like many of the haciendas was built of stone taken from the Maya buildings. There was only an Indian and his wife occupying this building, and they gave me a room furnished with one chair and a washstand. In Yucatan most people carry their own bed which consists of a hammock. I had mine that I brought from New York.

I was up at sunrise the next day to explore this old city which had been uninhabited for centuries and about which we know so little. This small knowledge only whets our curiosity and adds to our interest. I spent several weeks here, rising before dawn and working until sunset save for a couple hours siesta to escape the tropical heat of midday. It was a time of enchantment and full of day dreams. Afterwards I visited Uxmal, Labna and Kabah, and other cities.

So inspiring and vital does this architecture seem that this volume was prepared in the hope that other lovers of architecture may find as great enjoyment and profit in its study as I have found.

The material is partly from notes, photographs and drawings which I made in 1919 and later from photographs of recent excavations at Chichen Itza by the Carnegie Institution, and partly from illustrations taken from various monographs on Central America which have been published from time to time during the past hundred years. These books are now nearly all out of print and difficult and costly to obtain.

Originally it was intended to confine the book to the architecture of the Renaissance Period of Yucatan, but as the Classic Period is so appealing illustrations of many of the best examples have also been included.

It is the author's firm belief that this little known architecture of American origin, simple and classic in line, with a highly conventional ornamentation comparable with that of any period, is on the threshold of its second renaissance.

Dr. Manuel Gamio and others of Mexico City are making a strong appeal to their people to preserve the Indigene Art of Mexico, to preserve what remains, to restore and reconstruct where feasible, and above all to develop a newer art founded upon the splendid heritage which the white conquerors nearly destroyed, not realizing its priceless value.

Dr. Gamio contends that this treasure is the authochthonous art which in past centuries produced the famous architectural works of Yucatan and Teotihauacan and which is seen in ceramics, textiles, lacquers, mattings, basket work and a thousand articles produced by Indigene. The Indian Olympus, with its thousand gods sumptuously arrayed, its luxurious and tropical vegetation, its innumerable and gigantic mountain peaks, its azure skies radiant with brilliant light and warmth, its varied and profuse fauna—all this contemplated by generation after generation of Indigenes and by them interpreted plastically and pictorially explains the legitimate lineage of the indigenous art of Mexico as also its unique character.

Dr. Gamio further maintains that the reconstruction of the typical and architectural remains left by his forefathers will arouse within the Indigene a noble emulation and will tend to resurrect within him new ideals leading to a new life full of activity and sane well being.

Finally he asserts that we moderns should not strive to reproduce architectural works of art but should use the motives handed down to us, transformed, conventionalized and adapted to requirements of modern esthetic judgment, and should encourage the Indigene to continue the art of the lapidary, to carry on his wonderful work in obsidian, jade, rock crystal and other materials, to encourage the dying remnants of folk dances which suggest great possibilities for newer ballets to preserve the custom and design of former times. He believes that we are on the threshold of a renaissance of the first great American art.

The early Spanish conquerors did not at first realize the importance of the Maya art and civilization, and in their zeal to conquer the country spiritually, as well as materially, they wantonly destroyed much of real literary and artistic value.

Archbishop de Landa, second Archbishop of Yucatan, proudly writes, "I collected four thousand of their iniquitous books and images and burned them on the public square of Tikal, much to the lamentations of the natives." Before his death, however, he realized his mistake and then gathered much valuable material which he published in *Relacione de los Cosos de Yucatan.** This and the Chilam Balam, which are accounts from memory and traditions compiled by the remnants of the Maya priesthood, were published in the Maya language and Spanish type a hundred years or so after the conquest.

It was not until John L. Stevens, a New Yorker who had gone to Honduras on a diplomatic mission in 1838 and had become interested in the Indian cities, wrote two fascinating books,§ that the modern world became aware of the fact that America had once possessed a race of artistic and cultural development comparable with that of any people of antiquity. Stevens was accompanied in his researches and journeys through Central America by Frederick Catherwood, an English arhcitect of great artistic talent, who has left by far the finest and most inspiring collection of architectural drawings yet made of Maya architecture.

After the little furore which Stevens' works produced, the tropical forests once more engulfed the ancient art until it was again brought to light by the admirable scientific researches of an Englishman, A. P. Maudslay, in 1880. His work has been of inestimable value.[2]

The four expeditions of the Peabody Museum, Harvard University—1891-1902, to Copan, Tikal and other cities by Marshall H. Saville, John W. Owens, Dr. George Bryan Gordon, Teobert Maler and Dr. A. M. Tozzer have been of the utmost importance.

Since then general interest has gradually increased until now there are a host of scientific research workers including Dr. Herbert J. Spinden, Dr. William Gates, Dr. Thomas Gann, Edward H. Thompson, Dr. Sylvanus Griswold Morley, and many others.

At the present time research work and excavations are being carried on by the Carnegie Institution under the direction of Dr. Morley, at Chichen Itza, Yucatan, at Uaxactun, Guatemala and other places; by the Tulane University of New Orleans under Dr. Gates, at Vera Cruse, Palenque and elsewhere; by the Peabody Museum, Harvard University, under Dr. Spinden on the little known cities of the east coast of Yucatan, and by the Archæological Society of Washington, D. C., under the direction of Dr. Manuel Gamio in Guatemala City.

It gives me great pleasure to express my indebtedness to Dr. William H. Holmes, Director of the National Gallery of Art, for his early advice and assistance in the study of Maya art, and for his interest and encouragement in my researches;

To Mr. Edward H. Thompson for his courtesy and hospitality in permitting me to occupy his hacienda, and for many delightful and instructive hours spent in his company in Yucatan, and for his interest and approval of my attempts in restoring the original colors of the Temple of the Tigers;

To Mr. C. C. Willoughby, Director of the Peabody Museum of Harvard University and Dr. Clark Wissler, of the American Museum of Natural History, New York, and Dr. L. S. Rowe, Director of the Pan American Union, Washington, for permitting me to make selection from their collection of valuable photographs;

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* Royal Academy of History, Madrid, 1556.

§ Central America, Chipas and Yucatan, 2 vols., 1841. Incidents of Travel in Yucatan, 2 vols., 1843.

[2] Biologia Centrali Americana. A Glimpse of Guatemala.

To Dr. G. B. Gordon, Director of the University Museum, Philadelphia, for the Maya photographs he kindly furnished me, and his permission to reproduce the Hieroglyphics Staircase", and "A King in all His Glory".

I want to thank my friend, Dr. William Gates, Director of Central America Research, Tulane University, New Orleans, for the very valuable help he has given me in the study of Maya art and civilization, and for loaning me his photographic collection.

I wish to acknowledge my indebtedness, also, to Dr. Edgar L. Hewett, Director of the San Diego Museum, and to the Architectural Record for the use of Maya illustrations.

It has given me great pleasure to know that Dr. Merrian, Director of the Carnegie Institution of Washington, has considered my efforts of sufficient seriousness to permit me to include in my book hitherto unpublished photographs of the excavations of the Institution at Chichen Itza during 1924 and 1925 for which I sincerely thank him.

I am indebted to my good friend Dr. Sylvanus G. Morley, Associate of the Carnegie Institution of Washington, for his assistance and encouragement in my studies, and for revising the titles to my illustrations.

I wish to thank Mr. Albert Kelsey and Mr. Leon V. Solon for kindly loaning me illustrations of their work; Mr. and Mrs. James of Merida, for their hospitality while in Merida, and Mr. Crandall and others for the use of photographs and other assistance; and lastly I wish to acknowledge my deep indebtedness to Mr. B. H. Roberts, for his kind, sympathetic and untiring patience in aiding in the preparation and printing of this book.

AN OUTLINE OF MAYA
HISTORY
A. The Old Empire or Classic Period

SO IMBUED have we ever been with the importance of European history and art that we have not, until recently, realized that there lie buried in the tropical jungles of Central America a forgotten cultural civilization, worthy of the highest consideration.

At the time Imperial Rome was dazzling the ancient world by the brilliancy of its entertainments and the magnificence of its architecture, there flourished on this side of the Atlantic, a nation with an architecture so fine and a civilization so brilliant as to even rival Rome in its barbaric splendor.

This people, the Mayas, aptly called "The Greeks of the New World," inhabited that portion of Central America now known as Guatemala and Honduras. Their important cities, Copan, Tikal, Quirigua, Seibal, and many others, flourished at the beginning of the Christian Era.

The architecture of these cities, with their great civic center, about which clustered Temples, Pyramids and Palaces of a highly developed architecture in carefully cut stone elaborately ornamented with sculpture, all in brilliant colors, evinced a civilization and a knowledge comparable with any people of antiquity.

Nor was this culture limited to the fine arts. It included a political organization capable of conducting the affairs of great states. The exact nature of this we do not know other than that the rulers were hereditary and were closely allied with the priesthood. They possessed a highly organized and complicated religion, and learning was confined to the ruling class and the clergy. Smaller states were managed by over-lords not unlike, it is thought, to the Feudal system of Europe. So advanced a civilization needed and possessed a written, as well as a spoken, language. This they had already developed before the Christian Era—of a type unlike any other known writing.

It was hieroglyphic and was comparable, if not superior to, the Egyptian and Assyrian. It was partly ideographic and had so far developed as to be on the verge of a phonetic writing. It had advanced to a point where different glyphs could be expressed by sounds.

The earliest remaining records of this writing are cut in beautifully designed symbols or glyphs on their stone monuments and buildings, but particularly on a type of stelae which were small monoliths of stone erected about their temples, and the inscriptions refer almost exclusively to either dates of the structures, or to mark periods of time. Prof. William Gates has catalogued some 2500 different glyphs. The inscriptions also refer to astronomy. The Mayas possessed a knowledge of astronomy based on carefully recorded observations of the sun, moon and stars extending over a period of many centuries. They were able to predict with absolute precision simple eclipses, and they had evolved a calendar, though somewhat complicated, of almost perfect accuracy, quite as accurate and far better arranged than our own Gregorian calendar, and this must have been invented at least 2000 years earlier. It was absolute within itself and was in use during all the early period of the civilization.

The Mayas early developed several varieties of calendars.* Their earliest, it is thought, was a lunar calendar of twelve months of thirty days each, making a year of 360 days, and with a short month of five days. Later this calendar was changed to a month of twenty days and with a year of eighteen months and a

* Venus Calendar. Dr. Herbert J. Spinden, Curator of Mexican archaeology of the Peabody Museum, Harvard University.

According to the Associated Press of Dec. 28, 1925:

"An announcement from the museum yesterday said that Dr. Spinden had completed a

short month of four or five days, recognizing the necessity of adding a day every fourth year.

This little month, as it was called, was considered one of ill luck and misfortune. During this time, tradition relates, the people did practically nothing, fearing always some disaster.

To record time accurately, a numerical system was early evolved, consisting of dots and short straight lines. One dot represented one, two dots two, and so on to five, which was expressed by a short straight line. From five to ten by a line and dots, ten by two lines, fifteen by three lines, sixteen by three lines and one dot, so on to nineteen which was expressed by three lines and four dots. Twenty was represented by a glyph, which stood not only for twenty but the subject to be expressed. Their system was vigesimal.

The political rule seemed absolute and it is more than likely that the highest temporal and spiritual powers were vested in one person.

The Maya religion was Pantheistic with about twelve principal gods. These correspond more or less to those of ancient Greek and Roman mythology. There were both benevolent and malevolent deities.

The head god of the Mayas, Pantheon, was represented by the Roman-nosed god, probably Itzamma. He was regarded according to the early Spanish writers as the creator and father of all, the founder of the Mayan civilization and the god of light and life. Then there was the Maize God, and Kukulcan the Plumed Serpent of almost equal powers to the Roman-nosed God. Of the malevolent gods were Ahpuch, the Lord of Death, and others.

There seems also to have been a belief in a supreme being without form or substance.

The Maya writings were preserved in books called codices. Although there are a number of Aztec Codices, only three Maya ones are known; they are: The Dresden Codex, in the Dresden Museum; the Peresianns Codex, in the Louvre; the Tro-Cortesianns, in the Borgian Museum, at the College of Propaganda, Rome.

All of these books treat of the calendar and religious subjects. They are illuminated manuscripts written on prepared deer skin and Maguey paper and folded like a Japanese screen. There were evidently many of them at the time of the conquest, as explained in the Introduction.

Those destroyed are said to have treated of civil and religious history, rites, magic and medicine. Unlike the ancient Caldean and Egyptian they did not relate to the vainglorious deeds of forgotten Kings.

Brassem de Bourbourg in 1869-70 made careful studies of the codices. The Books of Chilam Balam relate largely to the biographies of the Cocoom, Tutul Xiu and the Chac Zib Chac families.

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correlation between the strange and wonderful time count of the Mayas and the true astronomical positions of the planet Venus in the sixth century B. C.

This achievement supplements the discovery by Dr. Spinden two years ago of the secret of the Mayan time count and is the culmination of investigations carried on for many years by members of the museum staff.

AGREES WITH CALENDAR

Dr. Spinden's findings with regard to the Venus calendar of the Mayas are in complete agreement with those reached for the annual calendar of the ancient people and for dates in their day count, according to the correlation with modern chronology announced by the Peabody Museum two years ago. At that time it was shown that the first date in the new world was August 6, 613 B. C., when the Mayas began to give each day its consecutive number and to keep a sharp record of celestial events, and that the perfected annual calendar was inaugurated in the Winter solstice of 580 B. C.

Dr. Spinden now is able to prove that the Venus calendar of the Mayas was put in final working order between two risings of Venus as morning star in conjunction with the Summer solstices of 538 and 530 B. C.

APPEARANCE OBSERVED

The Venus calendar depends on the fact that Venus, holding an orbit inside that of the earth, makes thirteen revolutions around the sun in about two days less than eight years. Viewed from the moving earth the planet seems to make only five revolutions. These being the five laps she gains over the earth in the uneven race. To gain a lap Venus first swings out through space and passes behind the sun, where she is lost to view at the end of the phase as morning star. Then, to overtake, she swings wide again and turns in between the earth and the sun. Approaching the end of her race Venus is a brilliant object as evening star, going down into the west soon after sunset. At the finish she is lost in the sunlight at inferior conjunction only to emerge before sunrise as morning star.

Having invented already a time count and a system of hieroglyphic writing which gave them a means of accurate record, the Mayas studied the mysterious coming and going of Venus. They found that the planet disappeared for eight days between the last glimpse of her in the west and the first in the east, and that the same phases of Venus come back in about 584 days on the average, so that five Venus years are virtually equal to eight ordinary years."

The records go back to about 160 A. D. but are somewhat clouded in mythology. These books have been of great service in correlating Maya and Christian Chronology.

The Mayas had been careful from the earliest times to date their monuments, so that we have a carefully arranged chronology. The earliest recorded date is on the Tuxtla statuette which was found near San Andres Tuxtla in the State of Vera Cruz, Mexico, about 1902, and was acquired by the U. S. National Museum. Plate XV. The date on this reads 8. 6. 2. 4. 17, or 96 B. C. It is 160 years earlier than the next earliest date, namely, the Leyden Plate.

The monuments of the Old Empire were continuously dated until about the year 600 A. D., when all dates in this area cease. It is therefore to be inferred that the civilization either suddenly became extinct or the people migrated to other localities. As monuments are found to the south, and to the north in Yucatan, dating from 600 A.D. on, it is to be inferred that the Mayas suddenly abandoned their monumental and costly cities.[1] Why they left this beautiful and fertile region we do not know. Various theories have been advanced: pestilence, war, famine. The period just past is known as the Classic Period or that of the Old Empire.

In spite of mighty strides that archaeology has made in recent years, the origin of the Mayas remains cloaked in mystery which may never be fully dispelled. Students who have delved deeply into the subject have advanced various and sometimes fantastic hypotheses but the more honest ones confess that much is mere conjecture.

From definitely dated monuments and other relics unearthed at Copan and its rival cities, Tikal and Quirigua, we know that at the very beginning of the Christian era and covering a period contemporaneous with imperial Rome, the civilization of those places was at its zenith. This civilization, like that of ancient Egypt, seems to have burst in all its glory during that period and to have finally vanished leaving no record of its origin, preliminary stages or development.

Southern India, Java, Carthage, Egypt and even the fabled lost continent of Atlantis have been severally suggested as the possible birthplace of the Mayas. Lord Kingsborough diligently sought to trace their descent from the Ten Lost Tribes of Israel, while Le Plongeon, apparently hopeless of even guessing where the Mayas came from, argued that Egypt itself was peopled by wanderers from Yucatan many centuries ago!

In all the maze of speculation, modern investigators, however, are not without some trustworthy lines of direct linguistic and archæological evidence. Dr. Morley has suggested that Maya art originated with the Huasteca, the only Maya-speaking tribe which is not contiguous to the main body of the Maya linguistic family, being entirely surrounded by other linguistic stocks. It is the only Maya group, moreover, which lives in a region barren of typical Maya archæological remains, save the Tuxtla Statuette, the earliest date in the Maya hieroglyphic writing. This relic is of unusual importance as indicating where the Maya first began to record their chronology in a locality in which other distinctive Maya remains have not been found.

The significance of the Huasteca, in the attempt to trace whence came the Mayas that left so indelible an impress upon the world's development in the arts, is now generally conceded. In their habitat on the Gulf of Mexico, far northwest of the site of the Maya civilization, they speak a Maya tongue but their prehistoric culture, as now revealed, shows no resemblance to that of the true Maya of either the Old nor the New Empire. The Huasteca possess no hieroglyphic writing, no highly developed calendar, nor does their architecture, sculpture and pottery show any resemblance to the remains of the true Maya civilization. The Huasteca-Maya resemblance ends with possession of a common language, but this postulates a common racial origin. Whether the Huastecas were left behind in a general southward migration of the Mayas or were a branch that pushed north from the parent stock is a question science as yet is unable to answer.

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[1] This vast territory thought to be the most thickly populated area in the world at that time.

T. A. Joyce states the belief that the Maya civilization originated where it reached its highest development during the Old Empire, northern Guatemala, but he admits that no beginnings of the culture have been found in this region, civilization having sprung, as it where, "full-blown from the earth."*

Morley's hypothesis, which he concedes lacks definite proof, is that at some remote time the Mayas may have lived somewhere north of Guatemala on the Gulf Coast plain of Mexico, between 18 and 22 degrees north latitude, and he says:

"Before developing their calendar, chronology, hieroglyphic writing and distinctive civilization, by which they were characterized in later times, the great mass of the stock moved south, leaving behind, perhaps, the more backward elements, who later developed a far lower and different culture but who continued to speak the mother Maya tongue, and who later became the Huasteca of historic times."

Sapper, on the other hand, believes that the original seat of the Maya family was Chiapas—Guatemala, and that tribes like the Huasteca migrated from there north and settled in their present cities.

It will be seen that the origin of the race is perhaps forever lost in the mists of antiquity. There is no European influence in its architecture, either of the Classic or the Renaissance Periods. While there can be but little doubt of the American origin of the Maya style, in spite of not being able to trace all the steps of development from the archaic to the highly developed period, there are certain motives that suggest an Eastern origin of the decoration at least—the most important of which are the cross-legged figures, strongly reminiscent of Buddha on the frieze of Temple Number 11 at Copan. Plate V.

Were the Mayas in communication with the East? This is a question which cannot be answered with our present knowledge. Later investigation may throw light upon this subject.

Messrs. Channing Arnold and F. J. Tabor Frost in "The American Egypt" advance the following theory.†

The origin of the Maya civilization, like many other mooted questions concerning this interesting and highly gifted people, is still a matter of speculation. Each one may evolve theories to his own fancy, each may dream dreams of this wondrous past until science, often the destroyer of romance, steps in with its hard, cold facts and puts an end to our visions.

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*Manuel Gamio has just left (Jan., 1926) for Guatemala City to investigate this very point. He heads the expedition sent out by the Archaeological Society of Washington, D. C.

† "Let us make a brief examination of the architectural ornamentation of the ancient buildings of the Buddhist East and those of Central America, and see if there exist any similarities which are of a nature to help the proof of the connection. Much has been made of that peculiar feature of Mayan decorative art, the 'snouted mask' or 'elephant trunk', common on the buildings of Palenque, and Chichen and Uxmal and many other cities.

Heads of the alligator's congener, the crocodile, exist in large numbers in Boro Budor and in the ruined Buddhist cities of Ceylon. In his 'Cambodge et Java' (1896) M. Albert Tissandier gives illustrations of the gargoyles decorating the terraces of Boro Budor showing them to be the fantastic heads of crocodiles, surmounted by a half-curled elephant's trunk." He writes (we translate) "This type of crocodile, ornamented with the trunk of an elephant, appears to be of Singhalese origin. I have remarked numerous examples at Anuradhapura in Ceylon, the building of which is much more ancient than Boro Budor, and also at Polonnaruwa.

From out the open jaws of these monsters peers in each case a little demon with grinning face." It is difficult indeed to believe that so singular a design and detail of decoration should have been evolved at once in ancient Buddhist India and among the American Indians of Yucatan and Guatemala.

At these two places, the ruins consist chiefly of stelæ and altars, and the decorations of these are un-American and Oriental in character.

But if there is any similarity between the minuter architectural details of the Mayan and Buddhist buildings, we believe that carefully studied, the former and particularly, as we should have expected, those of Copan and Quirigua, exhibit distinct survivals of Buddhist influence. Mr. Maudslay, in his superb series of photographs of stelæ (Biologia Centrali-Americana), shows clearly in the hands of nearly every figure what he calls "a manikin staff"—a short stick surmounted by a human figure issuing from feathers or leaves. We believe that it may be nothing less than a much corrupted survival of the sacred lotus held by Buddhist images.

There appear, too, in the grasp of many figures on the friezes of Bharahat short sticks, and surmounted manikins seated on bannerets. The "manikin staves" at Copan may be a blended memory of these two Buddhist symbols.

It is a water lily—the Buddhist lotus—which figures, often with fish swimming around, in almost every carving at Boro Budor and the ruined Buddhist cities. The drawing Mr. Maudslay gives of the Palenque carving is so exact a copy of the Buddhist lotus as to be quite amazing.

The figures on the stelae at Copan and Quirigua, in many instances have across their breasts what looks like a broad band. We believe this to be another Buddhist survival—viz. the ola or palm-leaf book which Buddha is nearly always shown holding.

The headdresses of the stelae statues are most reminiscent of the triple tiara of Buddhist images. The large square or round ear-ornaments at Quirigua are precisely like those in the sculptures of Boro Budor and in the island of Madura.

On the north face of the gigantic monolithic turtle at Quirigua is a cross-legged figure which in Mr. Maudslay's plate exhibits in the fullest manner many Buddhist survivals.

We suggest another Buddhist survival, namely that the "Crosses" (it is more obvious in the foliated one) are crude representations of the Sacred Tree of Buddhism, the "Tree of Wisdom."

As the Palenque tablets suggest that the "Cross" is the direct object of worship, it may be worth while here to mention that in the oldest Buddhist sculptures Buddha himself is never represented directly, but always under a symbol; often the sacred footprints-Buddha-pats-tree beneath which his meditations led him to divine knowledge.

But the faces of the statues will take us a step further; for they seem to be representations of those human types peculiar to Cambodia, Siam, and the Malay Peninsula, as will be seen from the illustrations.

They wear an Oriental headdress such as is found in none of the admittedly Mayan ruins, and which we believe we have identified as the ancient Indian turban shown clearly in the carvings at Bharahat.

At Palenque the figures have the characteristic features of the Americans and the native headgear, but the attitude is the typical Buddhist one, and there is moreover one figure which takes us back to the purer orientalism of Copan. 'The principal figure', says Stephens, 'sits cross-legged' on a couch ornamented with two leopard's heads, the attitude is easy, the physiognomy the same as that of the other personages, the expression calm and benevolent. The headdress differs from most of the others at Palenque in that it wants the plume of feathers. In the Buddhist carvings, Buddha is often represented seated on a couch carved in the form of a tiger or lion, or really two, for the body is double-headed. This seat is spoken of in the Sanskrit as Simphasana, literally 'the seat of lions.'

At Tikal, northeast of Lake Peten, a carved wooden lintel discovered by Mr. Maudslay, depicts two figures standing on two crouching bodies which he believed to represent prisoners. Elsewhere in Mayan ruins the design prevails. Now in the Indian, Cambodian and Javanese ruins recur again and again these crouching figures, acting as footstools for the chief personages of the sculpture.

Well, we have traced such a counterpart just where it ought to occur, if our theory is to hold good, viz. in the forests of Cambodia. At Angkor there are several such structures built of large blocks of hewn stone.

Then there are the curious figures carved on the walls of the Nunnery at both Chichen and Uxmal and on other Mayan ruins. They sit cross-legged in Buddhistic fashion in niches in the walls surrounded by an oval shaped ornamentation. These are like the images in the niches of the temples of all great Buddhist buildings.

The oval-shaped ornamentation may easily be, it really looks exactly like, the aureole which invariable surrounds the figure of the Buddha at Boro Budor and elsewhere. Moreover, these figures in Yucatan have a nimbus, too, just like the Buddhas. We are not, of course, trying to show that the Yucatecan figures represent Buddha; but we are suggesting that the Oriental pattern and designs for religious statuary had sunk deep into the Mayan mind.

The sculptures of the two civilizations are, as has been said, strikingly alike in detail, and they are also similar in subjects. They represent for the most part, when not strictly religious, processions, battle-scenes, and pictures of the daily life of the people. There are, too, bas reliefs showing the conquered submitting to the conqueror, the details being much like those of the famous carving on the rock at Behistun."

Whether Messrs. Arnold and Frosts' theory is correct is left to the reader to judge.

THE NEW EMPIRE,

or

THE MAYA RENAISSANCE.

Between 9. 18. 10. 0. 0. and 10. 2. 0. 0. 0. (541 to 619 A. D.), the cities of the old Empire were abandoned and the Mayas moved southwestward, and northward into Yucatan.

But even before this period the country had in 452 A.D., been explored.

It could only have been some dire misfortune which made the Mayas give up the rich and beautiful region which they occupied for less attractive Yucatan.

The peninsula is of recent geologic formation. Geologists state that it rose from the sea about 10,000 years ago. It is a flat uninteresting country, unbroken save for a low range of hills crossing the central part. The general elevation is about 25 feet above the sea. The underlying limestone foundation is of vertical stratification with a thin layer of rich soil not deep enough to hold water. The torrential rains sink quickly through this and are carried off by subterranean passages to the sea, so there is not a river in the whole length and breadth of Yucatan. The climate is tropical with a dry and a rainy season. During the dry season of four or five months water is a matter of all importance. This is provided either by natural wells, called by the natives Cenotes, or by cisterns.

The first settlement by the Mayas in Yucatan was at Bakhalal, just north of Tikal, but this lasted only 60 years.

The second, in 531 A. D., was at the great Cenote from which it derives its name Chichen Itza.

But this settlement was not of long duration, for in 669 A. D. it was abandoned.

The migration from the Old Empire, according to Lizana, flowed in two main currents, known to the Maya as the Cenial, or Little Descent, to the East Coast, and the Nohenial, or Great Descent, to the western part of the peninsula.

The Nohenial, or Great Descent, is thought to refer to the great outpouring of the people from the Usumacintla region into Western Yucatan, and as the latest date found here is 9. 18. 10. 0. 0., it is likely that this is the time, partly before and partly after, when the great migration took place.

During this wandering and unsettled period, culture and the fine arts must have retrograded. So that this epoch which lasted several centuries may be regarded as the Dark Ages of the Mayas.

After the abandonment of Chichen Itza the Itzas wandered for some years and settled at Chakanputun, where they are said to have lived until its destruction by fire in 945 A. D.

They were once more wanderers and in 965 A. D. they again occupied Chichen Itza and about the same time a new city was founded, called Mayapan. The nation began a new expansion, the arts were revived, and the end of the Transitional Period was at hand.

About 1000 a new tribe appeared from the west under the leadership of one Titul Xiu and settled at what is now known as Uxmal. This was in the territory of Mayapan, but the newcomers were cordially welcomed and shortly after their arrival a Federation of States was formed, including Uxmal, Chichen Itza and Mayapan, with the seat of government at Mayapan. The people prospered and great cities grew up. Many other towns were founded and it is computed that at about this time the Maya population in Yucatan reached two millions of souls. Remains are known of 100 towns.

During this period the arts were again revived and it is not unlikely that their architects visited the cities of their ancestors for study and inspiration.

This was the beginning of the second great era. It was also the Golden Age of Architecture, just as the Classic Period had been the Age of Sculpture. As a separate art sculpture never regained its lost supremacy but became the handmaid of architecture.

Elaborate façades with intricate and delicate sculptural decoration were created. While the great civic or religious centers do not compare with those of the classic period, nevertheless architecture in its better studied detail and with a higher and still more conventional system of ornament attained its highest ideals.

This period of universal peace came to an abrupt end in 1201 A. D. The ruler of Chichen Itza, Chac Xib Chac, seemed to have plotted against Hunac Ceel, the ruler of Mayapan, apparently over some personal matter, whereupon the ruler of Mayapan called in mercenary soldiers, the Toltecs from the Valley of Mexico, and defeated the Itzas. In recognition of their services they were given some control over Chichen Itza. During the Nahua occupation, new customs, new arts and a new or modified religion was introduced.

This, nevertheless, did not have a disastrous result on the architecture but rather broadened and enlarged it. New motives of decoration were brought in, interior valuting was improved and at least one new type of building, the Ball Court, was introduced.

But Hunac Ceel's victory seems to have turned his head and he and his followers became arrogant and oppressive and in order to retain his power it was necessary for him to surround himself with his Nahua allies.

Finally in the fifteenth century the unrest came to a climax. The Maya nobility, unable to endure such tyranny, banded together under the leadership of the Lord of Uxmal, proceeded against and utterly destroyed Mayapan.

With the destruction of Mayapan the centralized government of Yucatan was at an end, and it was the beginning of the end of the Maya civilization. The country was now split into warring factions. No one party seemed strong enough to gain supremacy. Following, as usual the wake of war, came famine and pestilence.

While in this weakened condition arrived a still greater calamity. In 1517 Francisco de Cordobo landed the first Spanish expedition on the shores of Yucatan. This met with such strong resistance that the enemy hastily retreated without more than discovering the country.

Two other expeditions met with similar disaster, that of Juan de Grijalva in 1518 and of Hermando Cortez in 1519.

In 1526, Francisco Montejo, having been granted the title of Adelantado of Yucatan, set about a conquest of the country in earnest. He sailed with three ships and 500 men and landed on the island of Cozumel and then proceeded to the main land and took possession of the country in the name of the King of Spain.

This empty ceremony was but an introduction, for fighting continued for fourteen years, and in spite of the weakened condition of the Mayas due to recent epidemics and famines, and the fact that the Spanish possessed the advantage of firearms and horses, it was with the greatest difficulty that they were finally able to conquer the country, the Mayas fighting to the last in desperate defense of their homes. The pacification of the country took place June 11, 1541, when the independent history of the great Maya epoch was at an end.

A brief summary of Maya history, with a table expressed in terms of the Old Empire Chronology (Initial Series), the New Empire Chronology (the u kahlay katunob), and the Christian Chronology, is given below,—*

THE OLD EMPIRE.

I. *The Early Period.*

The earliest times to 9.10.0.0.0. 1 Ahau 8 Kayab. (Old Chronology.)
The earliest times to Katun 1 Ahau. (New Chronology.)
The earliest times to 373.915 A. D. (Christian Chronology.)

During this period the calendar and hieroglyphic systems were being developed.

*The Inscriptions at Copan, Morley, Carnegie Institution, Washington, D. C.

*"The invention of the Central American Calendar between Aug. 6, 613 B. C. and Dec. 22, 580 B. C. is one of the outstanding intellectual achievements in the history of man."

"The Mayan calendar which this man invented ran without the loss of a day for 2148 years and controlled the religious and civil life of several nations."

Earliest dated object is the Tuxtla *Statuette, 8.6.2.4.17, 8 Caban 0 Kankin, or May 16, 98 B. C. *Leyden Plate, 8.14,3,1,12, 1 Eb 0 Yaxkin, or Nov. 17, 60 A. D. Earliest dated monument, Stela 9, at Uaxactun, 8.14.10.13.15, or June 10, 68 A. D.

Great cities were begun with enormous mounds and public squares, and many stelæ and altars set up. Number 3, the oldest stela found at Tikal, 214 A. D., and Stela 15 at Copan, thirty-seven years later; carving of this period crude. Principal conventions of Mayan art already fixed, including the Serpent in decoration.

II. *The Middle Period.*

9.10.0.0.0 1 Ahau 8 Kayab to 9.15.0.0.0 4 Ahau 13 Yax.
Katun 1 Ahau to Katun 4 Ahau.
373.915 A. D. to 472.480 A. D.

† "Some of the most beautiful works of art belong to the middle period. While archaism did not actually disappear till the end of this period there is a certain purity of style and straightforwardness of presentation about many of these early sculptures. Flamboyancy is not apparent. At Copan the Great Mound was begun during this period and this enormous undertaking doubtless absorbed so much energy that few stelæ were set up. The best series of monuments from the middle period are seen at Naranjo and Piedras Negras."

III. *The Great Period.*

9.15.0.0.0 4 Ahau 13 Yax to 10.2.0.0.0 3 Ahau 3 Ceh.
Katun 4 Ahau to Katun 3 Ahau.
472.480 A. D. to 610.471 A. D.

† "A short brilliant period followed in which many cities flourished. In addition to the cities already mentioned there were Quirigua, Ixkun, Seibal, Holmul, Nakum, Cancuen, Yaxchilan, Palenque, etc. The art passes through some interesting changes, becoming more complex in certain features and less complex in others. The architecture makes great advances. Rooms become wider, walls thinner, and forms more refined and pleasing. The calculations in the inscriptions deal more and more with complicated astronomical subjects and historical Initial Series dates become less and less common and finally cease. Many dates of the calendar round and period ending types are given. This brilliant epoch seems to have come to an end through civil war and social decadence. The references in the chronicles to this early period are very brief. The settlement of Bacalar is stated as well as the discovery of Chichen Itza. An Intitial Series inscription at the later site gives us one of our latest historical dates and permits the correlation of the ancient dates with European chronology."

IV. *The Colonization Period.*

9.14.0.0.0 6 Ahau 13 Muan to 10.6.0.0.0 8 Ahau 8 Yax.
Katun 6 Ahau to Katun 8 Ahau.
452.767 A. D. to 689.323 A. D.

During this period the great migration to the southwestward, and the northward to Yucatan took place. The arts retrograded. Chichen Itza was occupied and abandoned.

V. *The Transitional Period.*

10.6.0.0.0 8 Ahau 8 Yax to 11.1.0.0.0 4 Ahau 8 Mol.
Katun 8 Ahau to Katun 4 Ahau.
689.323 A. D. to 985.018 A. D.

Hochob and Dsibilnocac date from this decadent period.

The Itzas at Chakanputun until it was destroyed by fire, then in 965 A. D. return to Chichen Itza.

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*The Reduction of Mayan Dates, Dr. Herbert J. Spinden, Peabody Museum, Harvard University.

† Ancient Civilizations of Mexico and Central America, Herbert J. Spinden.

VI. *The Renaissance Period.*

11.1.0.0.0 4 Ahau 8 Mol. to 11.12.0.0.0 8 Ahau 3 Mol.
Katun 4 Ahau to Katun 8 Ahau.
985.018 A. D. to 1201.861 A. D.

Mayapan and Uxmal founded. Federation of States founded which included Chichen Itza, Uxmal and Mayapan, with capital at latter. This lasted for 200 years. Other cities, such as Kabah, Labna, Sayil and Izamal and many others, flourished during this time but we have no tradition of any except Izamal.

Revival of classic learning and re-birth of the arts.

The naturalistic styles of architectural decoration became more conventional than in the early period.

Mask panel, a face reduced to a rectangular panel, the use of geometric diaper backgrounds, fret meanders and banded columns, are common motifs of decoration. Many beautiful buildings begun during this period.

VII. *The Toltec Period.*

11.12.0.0.0 8 Ahau 3 Mol to 12.5.0.0.0 8 Ahau 3 Pax.
Katun 8 Ahau to Katun 8 Ahau.
120.861 A. D. to 1458.130 A. D.

Plot of Hunac Ceel. Federation of States ends.

Conquest of Chichen Itza where the Toltecs introduced a new government, new arts and a new religion.

Many undeveloped ideas from the Valley of Mexico were grasped by the Chichen Itza architects and developed into masterful works, such as the Ball Court, with its connected temples; the new treatment for facades as in the Temple of the Tigers; new ideas for plans as in the Castillo and the Temple of the Warriors; new motives of decoration as in feathered serpent columns; the use of roof crestings; animal friezes; ballusters; shields, etc. The exact length of the Toltec influence is unknown. The great Toltec cities were Tula, Teotihuacan and Cholula.

The Toltec influence was but little felt at Uxmal, where the purest Mayan architecture continued to be practiced. The Palace of the Governor and the Nunnery Quadrangle—the two great Maya masterpieces—were built about this time and show no outside influence.

The Ball Court was probably the only Toltec building erected here.

In 1458, Mayapan was destroyed by army led by the Lord of Uxmal.

VIII. *The Final Period.*

12.5.0.0.0 8 Ahau 3 Pax to 12.9.5.0.0 6 Ahau 3 Mac.
Katun 8 Ahau to Hotun 6 Ahau.
1458.130 A. D. to 1541.910 A. D.

"After the fall of Mayapan, the Mayas seem to have been divided into many warring factions. All the great cities were abandoned although the temples were still regarded as sacred. Of course, stone construction was still prevalent, as we know from some of the Spanish descriptions of towns on the coast. Learning was still maintained by the nobles and the priests. But there was not the centralized authority necessary for the keeping of such luxurious capitals as existed in the old days. The Itzas, in part at least, returned to one of their ancient seats in the south, founding the island town of Tayasal in Lake Peten. Here Mayan culture was preserved until 1696. At the present time certain ancient ideas still persist as has already been stated in connection with the ethnology of the Lacandone Indians. Upon the western highlands there are preserved traditions which concern the Quichés, Cakchiquels, and other Mayan tribes, but the history does not go back for more than two hundred years before the Spanish conquest. All in all, there is little to be said in favor of the frequent plaint that the coming of the white man snuffed out a culture that promised great things. The golden days of the Mayan civilization had already passed, and, if we may judge by the history of other nations, would never have returned."

Spinden.

I.

ARCHITECTURE

THE MAYA INDIAN architecture, so far as known, is of purely American origin. As we have seen in the historical survey, it is easy to trace the prehistoric and archaic periods, and then we find a highly developed style. Between the two latter there is a missing link. This, however, may be accounted for by supposing that the arts were developed in softer and more perishable materials than stone, and so the steps of progress have been lost. That certain motives of decoration may have been imported from the East, as suggested by Frost and Channing, is not improbable; nevertheless the development was on American soil.

The highly developed Maya style, as we find it in the Classic Period, may have had an adobe prototype, for we find at Copan walls faced with stone upon an adobe core. We also find in this period mounds which were doubtless surmounted by edifices of which there is now no trace. Had these buildings been of stone or even adobe, some remnant might have been left; on the other hand, had they been of wood, all vestige would have long since disappeared. Yet the architectural motives of the early period do not suggest a wooden prototype, but the heavy walls particularly point to an adobe origin. Furthermore, throughout all of Central America, Mexico and the southern part of the United States, adobe construction persists even to this day.

Of a wooden prototype, we find the walls of the Palaces of Tikal, cerrated, resembling a continuous row of columns placed so close together as to touch each other. This suggests a stockade wall of logs, and a glance at the buildings of Kabah and Labna confirms this hypothesis, for a wooden prototype in a land abounding with splendid timber is most natural.

The developed style of both the Classic and Renaissance periods is in a fine limestone, or sometimes of a rough stone-backing, faced with stucco. Brick is almost unknown, though a few examples have been found in the Usumatsintla Valley district.

The fundamental characteristics of the classic style dating from the Christian era to 600 A. D. and the Renaissance period, extending to the occupation of Chichen Itza by the Toltects, 1201 A. D. —some twelve hundred years, are the same. Each city, however, possessed its own individuality, and the study of this variation of the style is most interesting.

The chief characteristics of the style are the predominance of horizontal lines and the strong contrasts between perfectly plain surfaces and those of the greatest possible richness. In that portion which probably had an adobe origin we find façades divided into two parts, a lower half of perfectly plain ashler, and the upper of the richest possible decoration of highly conventional and symbolic ornament, the significance of which is unknown to us.

The greater part of Maya architecture follows these lines. The two portions are separated by a strong horizontal line in the form of a belt course or medial cornice, as it is generally called, and the whole is crowned by a strong cornice.

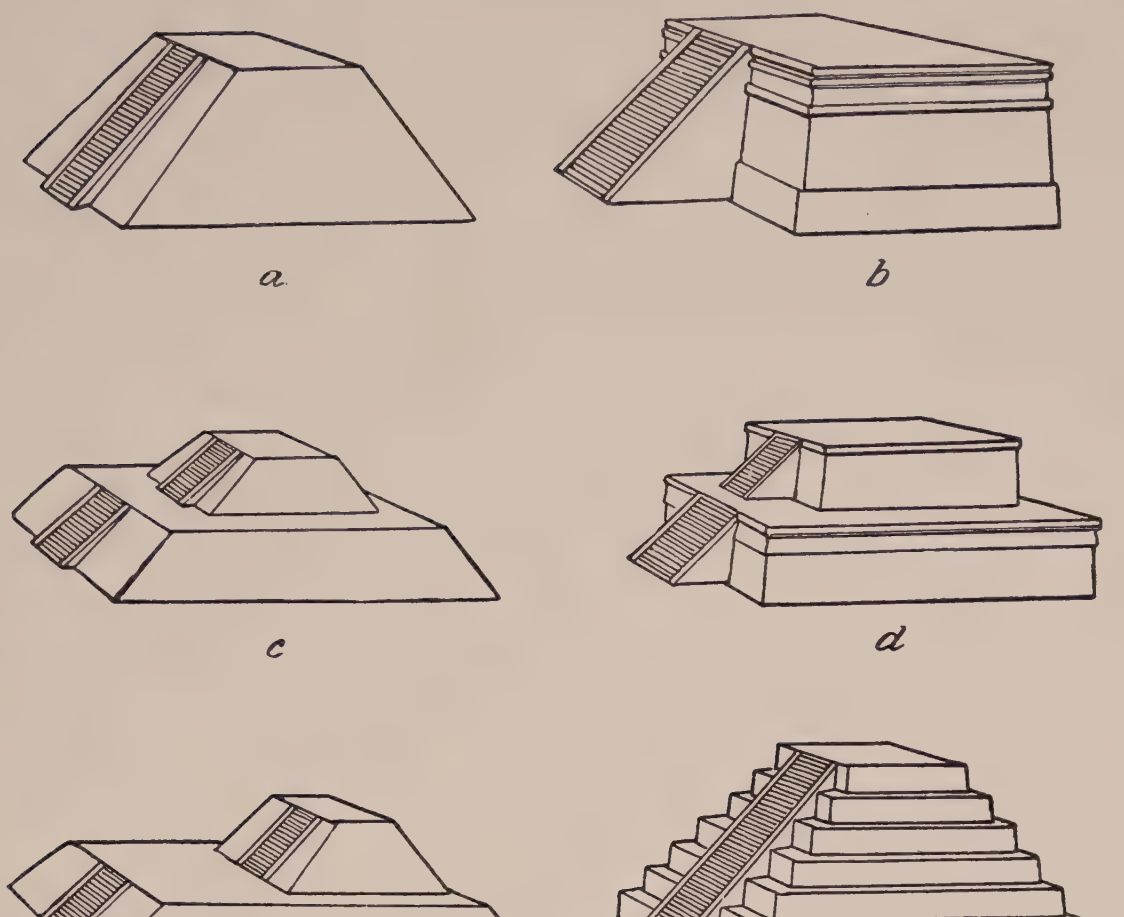
Openings are usually rectangular, and the smaller ones have stone lintels, while the larger are generally of sapote wood. Those of the earlier buildings are small but gradually become larger until in the late period they develop into real porticos, and actual temples *in Antis* are found.

CIVIC PLANNING.

Early in the Classic Period is found a grouping of buildings about great plazas and courts, an appreciation of monumental dispositions of buildings and the uses of vast terraces that is very extraordinary. Copan, Tikal and other cities thus possessed civic or religious centers in the first centuries of the Christian Era. Great natural and artificial acropoleis were also largely used. The orientation with greater or less accuracy of buildings and plazas continued throughout Maya Epoch.

EXAMPLES OF STYLOBATES, TERRACES AND PYRAMIDS, SUPERSTRUCTURES OMITTED.

BY DR. W. H. HOLMES.



a, b, c, d and *e* Common forms.
f. El Castillo, Chichen Itza.
g. Palace of the Governor, Uxmal.
h. Temple of the Magician.
i. Temple of the Tigers of Ball Court, Chichen Itza.

TERRACES AND SUBSTRUCTURES.

In a flat country like Yucatan one can readily see why the Mayas employed almost universally terraces and substructures. They were desirable to give the buildings proper settings, and the elevated terraces afforded agreeable resting places and more extended views. But this terracing originated during the Classic period when the race inhabited the hilly portions of Central America.

The real reason, therefore, for their employment was the appreciation of the architectural value of placing structures on proper pedestals. Maya architecture is essentially monumental. The Maya architects understood the fundamentals of good design.

PYRAMIDS—MOUNDS

Unlike the Egyptian pyramids, the Mayas were always truncated and surmounted by a temple.

There are many lower mounds without superstructure, but it is thought that these once possessed buildings of a perishable material, such as wood, which have long since disappeared.

Pyramids were usually stepped but not always. Nine seems to have been a favorite number, as bearing some religious significance. Those at Tikal were the highest and steepest. At Palenque it is supposed the steps were about a foot high.

There is always a grand staircase on at least one side which leads to the temple above. Many pyramids have grand staircases on all four sides. These are supposed to be sacrificial temples, and there was usually a sacrificial building at their base. The pyramids were generally faced with cut stone, though some were built of rubble and plastered.

As there was an ever present desire to elevate buildings, when they were not erected on pyramids or terraces they were placed on stylobates.

STAIRCASES.

The Mayas appreciated the architectural value of staircases as they did terraces, each pyramid, as has just been stated, possessed one or more. Each terrace supporting a palace was mounted by a staircase of monumental dimensions. Although there are some Maya buildings from two to five stories in height, the staircases are nearly always on the exterior. A few interior ones are known, as those of the tower at Palenque and the Caracol at Chichen Itza. Many wooden ones were probably used, but have all disappeared.

The Maya staircases are as a rule very steep, the rise in many cases being greater than the tread which is usually 8″ or 9″. So steep and high are those of the great pyramids that few dare to ascend them except on their knees.

CLASSES OF BUILDINGS.

There are but two general classes of buildings, temples and palaces or residences of the rulers or clergy. These may have been the governmental buildings; their exact use is unknown. A third class was introduced by the Toltecs after their occupation of Chichen Itza—it was the Ball Court, described on page opposite Pl. XLI.

The dwellings of the masses were doubtless, as today, of perishable material, and no vestiges of them remain. The abode of the Indian of today, though simple and inexpensive to construct, is a perfect example of adaptation to conditions of a tropical climate.

These houses are no mean structures and are well worthy a description. They are usually rectangular in plan consisting of but one room. The floor and side walls to a height of about two feet are made of lime mortar. Above this for a height of about seven feet is a wall or stockade of small timbers. This is sometimes plastered. The roof, which is thatched and overhangs, rests on four free standing posts which are inside of the main walls. There is an air space of eighteen inches or two feet between the side walls and the roof which serves for ventilation, but the overhanging eaves hide this space. The houses are remarkably cool in the hottest weather and their form and construction is a great prevention against reptiles and insect life. The inhabitants sleep in hammocks and at night folding screens are used. When the screens and hammocks are put away a large and delightful living room remains.

DEVELOPMENT OF PLANS AND THE MAYA VAULT.

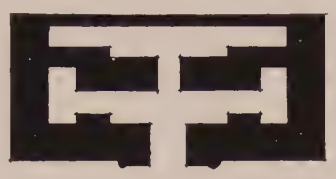
As usual in tropical climes, the Mayas were an outdoor people. Great halls for assembly were unnecessary, and undesirable on account of the heat. The religious services must have been held out of doors, as only buildings of very small interiors have come down to us. Temples were little more than shrines or great altars, before which the congregation probably worshipped. The plans of the temples were therefore insignficant in size and underwent a gradual but not startling development from a single cell to one of several chambers, as seen at Chichen Itza.

The plans of the early Maya renaissance temples were again simple, but under the Toltec influence took on a new importance.

Plans showing the development of the Maya Temple.

1. Single chamber, with narrow door.

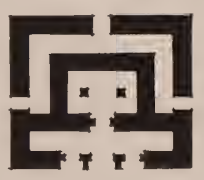
2. Plan, Temple No. 2, Tikal, showing three chambers, one behind the other—the doors are still narrow.



3. Plan of Temple No. 22, Copan, showing an outer and inner chamber between which is a heavy wall to carry the roof comb.

4. The Palenque type, sanctuary with tablet chamber and two small side chambers. The two central heavy piers carry the roof comb. The Tikal construction is the heaviest and the Palenque the lightest of the Maya buildings.

5. Two-chamber temple, see plan Temple of the Tigers, Plate XLII. Here the doorway has developed into a portico or temple in-antis.

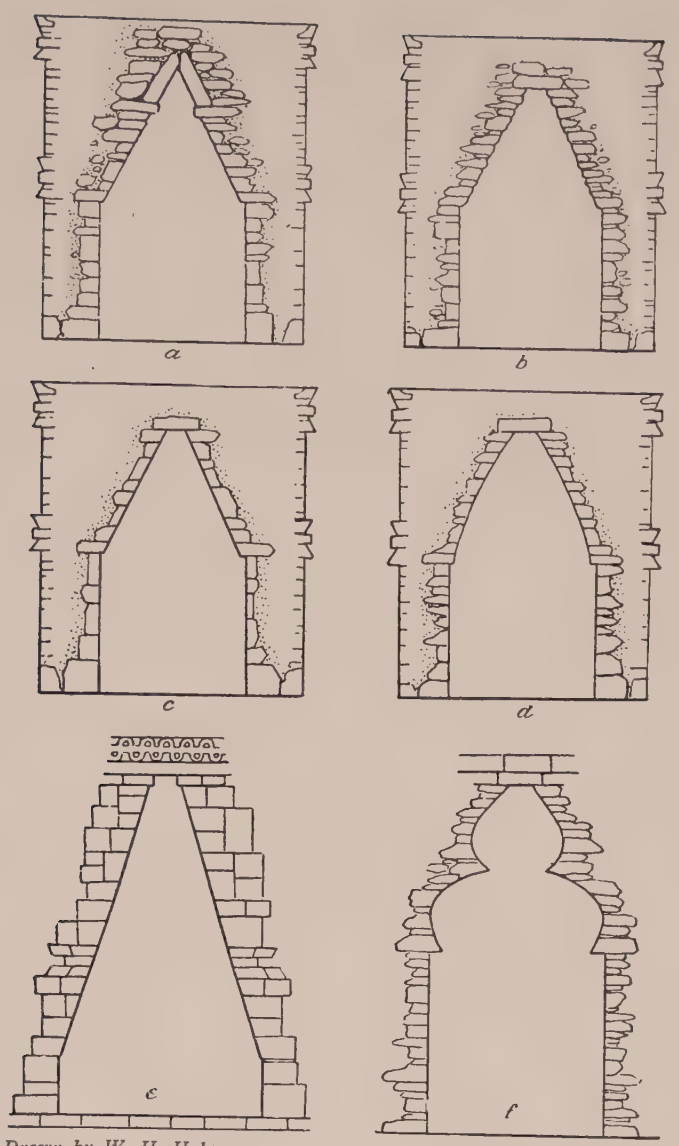


6. Castillo, Chichen Itza. This shows two new principles in Maya construction—the front wall, as in the Temple of the Tigers of about the same date, is supported by two serpent columns and has become so open as to be a portico—the second point is that two piers, supporting triple vaults, take the place of cross walls.

A still further development of this plan is that of the Temple of the Warriors. Opposite Plate LVII.

The Maya architects seem to have been hampered in the development of the plan by their apparent inability to find any other method of supporting the roof except by the so-called Maya arch. The true principle of the arch they never knew, but they built an approximation to it by a method of corbelling, as did the early Greeks at the Treasure House of Artemus. Various modifications of this are shown on next page. As the corbelling was backed up by concrete many of the corbelled arches were in reality monolithic constructions. This method of construction naturally limited the widths of interiors, the widest known being only about 14 feet, but of lengths up to 100 feet or more.

While there are slight variations in the form of the arches, the same principle was maintained from the earliest to the latest Maya period.



Drawn by W. H. Holmes.

EXAMPLES OF MAYA ARCHES.

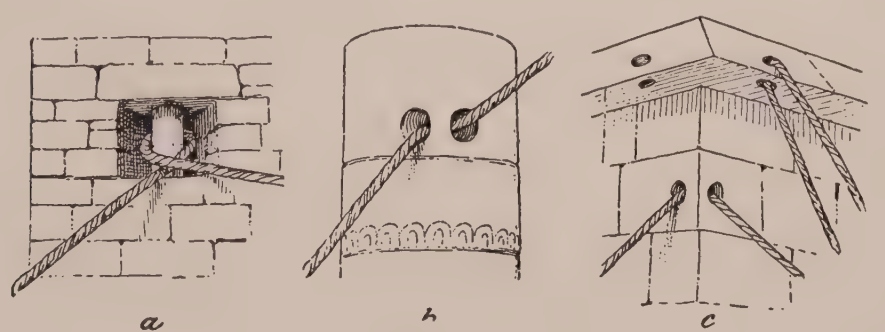
a. Section of cuneiform arch with acute apex, Chichen-Itza.
b. Section of ordinary arch with flat capstone.
c. Section of ordinary arch with dressed surfaces.
d. Section of ordinary arch with dressed surfaces and curved soffit slopes.
e. Portal arch with long slopes, showing masonry of exterior facing.
f. Section of trefoil, portal arch of Palenque.

Rooms were usually built in pairs, one behind the other, but at Tikal we find examples that are three deep. It was not until the Toltecs' time that the Mayas replaced the intermediate wall by columns when a radical change took place in temple plans. This is seen in the Castillo, and Temple of the Warriors, at Chichen Itza.

In Tuluum, perhaps of still later date, we find interiors roofed by logs which served as roof beams, and these were covered with plaster—a still better method for breadth, but not so lasting, as all such roofs have fallen owing to the decay of the beams.

Of the palace plans there is greater variety. A typical plan is one of a long, rectangular building with a series of doorways, each giving access to a pair of chambers opening into each other. Often these buildings were erected with doors on either side, in which case the building was four rooms deep with a pair of chambers on either side of the building.

In some instances four of these units were grouped about a court. Examples of this type are found at Tikal and the Nunnery Quadrangle at Uxmal. Still another type was a rectangular building with a court in the center. Various palace plans are shown on the general plan of Tikal and other cities.



AWNINGS, BANNER OR FLAG STAYS

MATERIALS

A fine limestone suitable for building purposes is found throughout the Maya area. This also furnishes, when burned, an inexhaustible supply of lime.

The stone, however, varies in different localities from a fine grained soft, easily worked quality, as in Yucatan, to a hard, coarse one at Palenque.

As the stone is rare, or less workable, greater or less use is made of stucco or plaster. These materials in turn have naturally had their influence upon the mass and details of the architecture, in different localities.

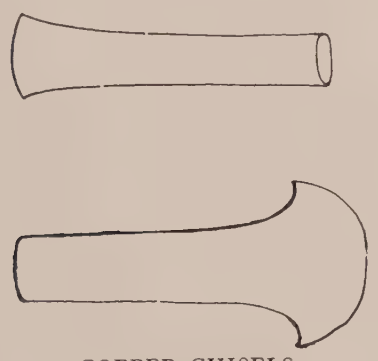
The ashler masonry was generally, though not always, laid up dry, but when finished was plastered over with a thin coat of lime plaster. An excellent mortar was made of crushed limestone and slacked lime. The floors and roofs were plastered over with heavy coats of mortar. Wood was, of course, largely used, but has come down to us only in the form of lintels.

The Mayas apparently had no faith in limestone for lintels of any great length, as it was used only for narrow openings; wide ones were always spanned with wood, as having greater transverse strength. The material usually employed was chico sapote, the wood from which chicle is extracted which is used in the manufacture of chewing gum.

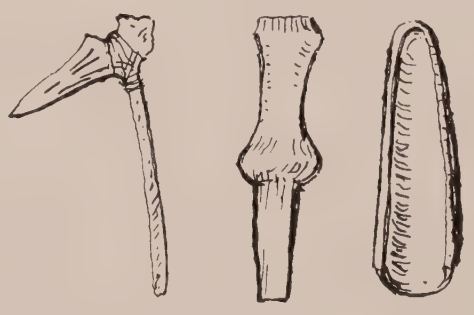
Mr. Frans Blom writes me from Tulane University that Comalcalco has several temples of unusual ground plan and built entirely of burnt brick. There is no stone whatsoever in that region, but mortar was burnt from oyster shells collected in lagoons not far from the ruins. The average height of the bricks is 19 centimetres broad, 25 centimetres long, and 4 to 6 centimetres thick. The layer of mortar between the bricks is from 4 to 8 centimetres thick. The largest brick found was in the palace (Charnay, French edition, page 167, building No. 4). It lay as a lintel over a kind of window and was 1.02 metres long, 50 centimetres broad and 5 centimetres thick.

TOOLS

How was the exquisite carving of the Mayas executed? Iron was unknown, and but small quantities of copper were available, and this was brought from other countries. Some copper tools have been found, but not many. It is believed that stone tools were generally used for stone-cutting, and probably obsidian for wood.



COPPER CHISELS



STONE HAMMER AND TOOLS

WALLS AND CONSTRUCTION.

The walls in many cases are of an excessive thickness. This may be due to an adobe origin, or to the method of construction which is not unlike the ancient Roman, where an outer and inner wall was built of ashler and the space between filled with concrete. The inner walls were carried up vertically to a certain height and then corbelled, thus forming chambers, and the Maya vault. Either as the walls went up or when they were finished the space between was filled with concrete, thus making the entire structure monolithic.

It may be that some walls were built of concrete and faced with an ashler, which was not properly keyed to it. This may account for the falling of the ashler from the facade of the Palace of the Governor at Uxmal.

A glance at a typical cross section (see preceding page) will show this construction to be cumbersome at best. With two chambers the great heavy central mass was balanced but the outer ones were not. This cross section probably gives the *raison d'être* for the roof comb and the flying façade. They served the same purpose the pinnacles did for the Gothic arch, viz: gave them stability. See Plate XXXIII.

At Palenque in many of the buildings the outer wall above the medial cornice sloped in, thus further weakening the construction. The reason for this was not constructive but for architectural effect. In the charming little Temple of the Sun and the Temple of the Cross, the sloping wall, the roof and the roof comb were moulded into a homogeneous, graceful, artistic mass. Plate XXVIII.

It is possible to trace Maya civilization for nearly 1500 years. During all this time there was but little development in construction, in fact, almost no change until the Toltec period of Yucatan. Architecture, on the other hand, although in plan and conception monumental from the very beginning, was always fresh, inspiring, imaginative, and ornament developed from natural and realistic forms to a beauty of design and convention unsurpassed by any art.

ROOFS

Roofs were generally flat as usual in countries without snow. An exception however is found at Palenque, where roofs similar to those designed by Mansard are to be found. This may have been for artistic purpose or to shed the tropical rains.

ROOF COMBS AND FLYING FAÇADES.

A very remarkable development of super-structure dating from the very earliest buildings, as at Tikal and Palenque, continued to be practiced throughout Maya period. It is known as the roof comb.

The roof comb and flying façade may have had their origin either as decorative motifs to increase the height of the rather low façades of the buildings, or to stabilize the top-heavy construction, or to furnish an opportunity for night illumination. How magnificent some of the great temples at Tikal, for example, would have looked at night with lights burning in each of the many apertures! Maler states that when he visited Menché, in the nineties, he found the Indians had shortly before left incense burners in some of the openings of one of the temples, and Thompson has stated that he has found incense burners in the roof combs of Northern Yucatan. The other purpose for which these may have been used was that of construction, to act as a vertical component to hold down the masonry of the corbled roof. While a roof comb over the mass of masonry between two chambers accomplishes this purpose for the central part of the structure, a so-called flying façade would accomplish a similar purpose over the façade. But the Mayas do not seem to have used both motifs until a late date. The best example is the Chichanchob at Chichen Itza. Plate XXXIII.

HIGH BUILDINGS.

The Mayas erected buildings as high as five stories. They were not in most cases sure enough of their construction to build the rooms over each other. The upper story rooms were usually erected over solid cores, as shown opposite Plate XXX. There are a few exceptions to this general rule; the most notable is the four-storied tower at Palenque. While the corbeled arch was the usual method for roofing an interior, logs imbedded in mortar were sometimes used, making flat ceilings as is shown in the late Temples at Tuluum.

DOORWAYS.

The characteristic Maya doorway is a small rectangular opening with plain jambs and lintel, or with carved figures forming an architrave and jambs, and in some cases with decorated lintels. The lintels in all except the narrowest doorways were of sapote wood,

usually elaborately carved. No doors are known but there are holes in many jambs suggesting the use of curtains.

There are examples of several doorways placed so close together that the space between really became piers and the space behind a portico, as in the temples and palace at Palenque.

When columns took the place of such piers a still more open portico was the result as seen in the North Temple and the Temple of the Tigers of the Ball Court, Chichen Itza.

WINDOWS

There are no windows in Maya architecture, only small openings at Palenque and Tuluum, a few inches wide by about 12 high. In a country of tropical sunlight where the intensive light creeps in and permeates the smallest aperture, the people sought repose in the escape from the burning effects of the sun and the intense light.

CORNICES

A peculiarity of the cornices is that they are made up of straight lines or planes. The typical Maya cornice is divided into three parts, two inclined surfaces separated by a fillet. See Plate LXXXIX.

The fillet is frequently enriched as in the cornice of the Palace of the Governor at Uxmal, and the inclined surfaces are decorated as in the cornice of the Eastern wing of the Nunnery at Chichen Itza.

While there is great variety in the detail of the design and although the cornice sometimes possesses five members, they always follow the lines of the typical cornice.

COLUMNS.

Columns were not used in Maya architecture until a late date and were probably introduced by the Nahaus from the Valley of Mexico after their occupation of Chichen Itza.

There are more varieties of columns to be found in Chichen Itza than in any other Mayan City. Here are found elaborately ornamented round columns in the small temple of the Ball Court, plain round ones in the group of the Thousand Columns, elaborate square ones in the South Temple of the Ball Court and in the interior of many of the temples.

The most splendid column of Maya architecture is the Feathered Serpent Column. The feathered serpent, the union of a bird, the God of the air, and the rattlesnake, the God of the earth, was the most sacred of the Maya-Toltec deities.

The transmutation of this serpent into a supporting architectural member was a masterly achievement and this design is worthy to be classed as the *sixth order of architecture.*

The Temple of the High Priests and the Temple of the Warriors each possess excellent examples of this column. These are square. The two most beautiful examples, however, both round, are found at the entrance to the Temple of the Castillo and Temple of the Tigers. These are the finest known. Further descriptions of these columns are found under separate articles on these temples.

Splendid examples of columns are also found in Tuluum.

An altogether different variety of column is frequently used at Labna, Kabah and other late cities of Yucatan. These are more properly speaking colonettes. They are placed so close together as to form a solid wall and are really a form of wall decoration. A few examples of colonettes of this order are found at Uxmal but no free standing columns. It is possible that these were also used in Tikal.

ORNAMENTATION.

Maya ornament is bold and vigorous, which is quite necessary in climates of intense sunshine. During the early Classic Period it was more or less realistic, but soon became conventional. Early, too, it was full of symbolism which gradually developed until the original motives were probably lost to view. The motives were drawn from plant, animal and human life.

The human figure in high relief was used as a decorative motive on façade throughout the Maya era.

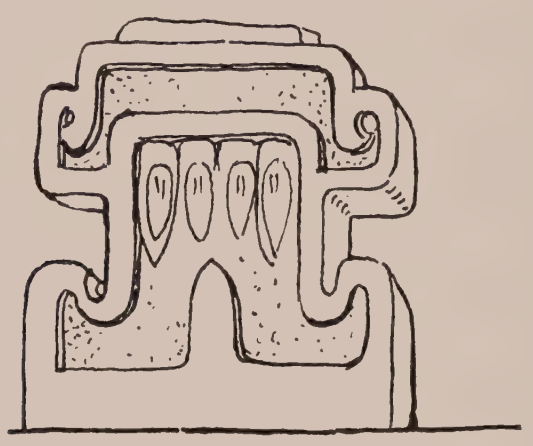
In regard to the human form in Maya art, Spinden says:*

"But, unfortunately for our fuller understanding, the human form had only a minor interest because the gods were not in the image of man and the art was essentially religious. The gods were at best half human and half animal with grotesque elaborations. The high esthetic qualities were therefore wasted on subjects that appear trivial to many of us. But, as we break away more and more from the shackles of our own artistic conventions, we shall be able to appreciate more and more the many beauties of ancient American sculpture."

In reference to design, Spinden says:*

"It is difficult to compare directly the graphic and plastic arts of different nations where the subject matter is diverse unless we compare them in accordance with absolute principles of design, composition and perspective drawing. The Mayas produced one of the few really great and coherent expressions of beauty so far given the world and their influence in America was historically as important as was that of the Greeks in Europe.

Set as we are in the matrix of our own religious and artistic conventions, we find it difficult to approach sympathetically beauty that is overcast with an incomprehensible religion. When we can bring ourselves to feel the serpent symbolism of the Mayan artists as we feel, for instance, the conventional halo that crowns the ideal head of Christ, then we shall be able to recognize the truly emotional qualities of Mayan sculptures."



SO-CALLED CROSS OF
TEOTIHUACAN
(Suggestive for a Roof Cresting.)

STELAE, LINTELS AND ALTARS

THE MAYA STELAE are elaborately carved monoliths of stone always bearing the date of their erection and varying in width from 2 to 4 feet and from 12 to 36 feet in height. Their primary object seems to have been to mark ends of the even period of the Long Count. Their other uses are problematical though they probably commemorated actual historic events such as current astronomical phenomena. To sum up all the evidence as to their nature and probable function, it appears possible to state the following general conclusions concerning them, according to Morley:

1. "They were period markers erected to commemorate the passage of successive units of the Maya era.

2. The unit chosen for this purpose was at first the katun, later the lahuntun and still later, at the end of the Old Empire, the hotun.

3. The Initial and Secondary Series, Period Ending and Calendar Round dates record specific days in the Maya Chronological era and the Supplementary Series set forth certain lunar and eclipse data concerning the Initial Series dates which they respectively accompany."

The location of many of the stelae and altars in front of the temples was architectural while others do not seem to have fol-

*Ancient Civilizations of Mexico and Central America by Dr. Herbert J. Spinden.

lowed any general rule. They are of greatest interest to us in the part they play in the development of the art of sculpture. Dr. Spinden* has endeavored to classify them according to style and he has thrown much light on the subject.

While the Mayas modelled figures in the full round but few examples have come down to us, possibly because they were so easily carried away from the ruins. It was a common practice especially in the early period to decorate buildings with statues in high relief or three-quarter round, and in the stelae of the earliest period we find usually a collosal figure in high relief but in an archaic position. These figures are strikingly disproportioned and standing always in a certain position, holding a ceremonial bar, which indicates that they were perhaps wholly symbolic, or they may have portrayed the ruler or some important personage of the day. These early stelae are always square in plan, later they became rectangular, lower in relief, and the figure took on better proportions and became the all-important feature of the design. As a study in the development of Maya art they are of great value. The beauty of composition, the remarkable fore-shortening and perspective, the skill of execution, place these bas reliefs among the most interesting examples of decorative sculpture ever produced. While some of the designs may apear to be too ornate and complicated, it must be remembered that these were treated in strong colors which naturally tended to simplify the whole.

The extraordinary complexity of the decoration of the door lintels, especially in Yaxchilan, is quite remarkable. Why they should have spent such an amount of effort upon a door lintel which is so difficult to see is quite incomprehensible.

Small altars in stone 6 to 10 feet in length were often placed in front of the stelae. These are either amorphous or representing animal monsters. The skill and cleverness of design in connection with these is also worthy of study.

It was during the great period of Maya art that the sculpture of the stelae reached its highest development. Later they seem to have fallen into disuse and in the Renaissance Period stelae are rarely used and the art of the sculptor became merely the work of the clever craftsman.

Copan has, owing to its great number of stelae, been called the City of Idols.

It contains forty per cent of all the Maya inscriptions. Copan is the best place in which to study the evolution of hieroglyphic writing. There are thirty-six stelae here. Stelae No. 20 has the date 9. 1. 10. 0. 0. 0. This is also an excellent place to study the development of the stelae, the simplest form of which has one face sculptured and three plain. There are two examples. In the next form two alternate faces are sculptured, the remaining two being plain.

Possibly as early as 9. 1. 10. 0. 0, the all-glyphic stelae was introduced, with inscriptions on all four faces. This class is represented by 9 monuments.

The first representation of the human figure on stelæ was possibly as early as 9. 7. 0. 0. 0, the back and sides of the stelæ being devoted to inscriptions. This class persisted for about 160 years and there are 11 examples.

Stelae having human figures sculptured on two faces, the remaining two faces being inscribed with glyphs, first appear in 9. 11. 0. 0. 0, and lasted about 125 years. There are four examples.

Early in the Great Period, the apparel of the human figure became so elaborate that the glyph panel was crowded around on the back of the stelae, the sides being given over to the sweeping plumes and other details of the clothing. This style lasted about 45 years and there are six examples. There are 27 rectangular altars and 12 round ones and a few irregular shapes.

COLOR.

Color has almost disappeared from the buildings after their long exposure to rain and sun, although there are traces of it everywhere. As far as known it was universally used both on the exterior and interior of the buildings from the earliest times to the

*Maya Art, Peabody Museum, Harvard University.

latest period. Color has been well preserved on buildings that have been covered up or buried. Last year when excavating the Temple of the Warriors at Chichen Itza, the officials of the Carnegie Institution report that the colors were probably as brilliant as though just applied but faded quickly upon exposure to the air. Colored studies were carefully made of these buildings.

The same is reported of the elaborate temple at the foot of the Temple of the Tigers at Chichen Itza—color studies are also preserved of this in the Peabody Museum and the University Museum in Philadelphia. There are also many historical references to the use of color.

Interiors were sometimes colored in solid tones, sometimes enriched by decorative designs and sometimes by incised figures and by mural painting, as in Tuluum and the Temple of the Tigers at Chichen Itza.

In the latter buildings a great battle scene is represented. This is pictorial and is rather more historic than decorative. Illustrations of this are found on Plate LI. Maudslay has gone into great detail illustrating these notable murals in Biologia Centrali Americana, and Lothrop in the Carnegie publication on Tuluum. We know from the traces of color still preserved that deep red formed the background for much of the ornament; that a lighter shade of red was used for flesh tones; that black, white and yellow were common and that all featherwork was in green.

CONDITION OF THE MONUMENTS TO-DAY.

As we have seen, the material of which all the remaining Maya architecture was constructed is an excellent limestone, and the buildings would today be in almost perfect condition but for three causes, the foremost of which is Man. These buildings, like the Coliseum and many edifices of antiquity, offered tempting quarries for succeeding generations. Thus we see what were once beautifully carved doorways and splendid ashlar façades robbed not only of their adornments but of the actual plain cut stone work as well. Many of the haciendas of recent date are largely built of the old buildings.

The second cause of destruction was the use of wood for lintels over columns and wide openings. The wood generally used was chico-sapote. This wood, of a beautiful mahogany color, is exceedingly hard and durable. Naturally the Mayas believed this to be stronger than stone, hence its use. While it may, when newly cut, have had a greater transverse strength than stone, it was of course not so durable and, after several centuries of tropical rain, it succumbed and the lintels broke, thus precipitating upon the ground many of the façades.

The third cause of destruction is plant life. Seeds carried by birds and the winds, fall upon joints between stones, previously filled with dust and dirt, and take root and the roots push their way between the stones forcing them apart. This destruction is ever going on.

The greatest enemy of stone masonry is frost. Fortunately this is not present, so that many of the stones are as fresh and sharp as though carved yesterday.

COPAN

HONDURAS.

COPAN was made known to the Spaniards as early as 1576 by a letter written to Philip II by Garcia de Palacio.

A detailed description of the ruins is given in "Incidents of Travel in Central America, Chiapas and Yucatan" by John L. Stephens, published by John Murray, London, 1841, but more particularly through A. P. Maudslay, who visited Copan in 1881 and again in 1885. On the second expedition he cleared away the debris which brought to view the great staircase and outlines of many important pyramids. Maudslay's investigations enabled him to prepare the first comprehensive plan of Copan, and the model which he made from his early drawings is still one of the best of this interesting city. Plate IV.

Copies of the plaster cast and of the stelae and altars can now be found in many of the museums of this country and in England. The beautiful drawings he prepared from these plaster casts are extremely interesting. We have reproduced several. They are published in "A Glimpse of Guatemala" and in the "Biologia Centrali-Americana."

There is a general impression among archaeologists that Copan is the oldest of the Maya cities, although the oldest dated stela is at Uaxactun, Stela 9. (8. 14. 10. 13. 15), and the next oldest at Tikal and the third at Copan, Stela 24. (9. 2. 10. 0. 0.).

In 1891, the Directors of the Peabody Institute of Massachusetts made arrangements with the Government of Honduras by which they acquired complete control of the ruins for a period of ten years on certain conditions, of which one was that a certain amount of the work should be done on the spot during each year. Four expeditions were made, when the work was suddenly called to a halt in 1895 by the abrupt revoke of the edict by the Government of Honduras. Nevertheless, these expeditions were of great value.*

The first expedition was in charge of Mr. M. P. Seville and Mr. J. G. Owens. The second expedition was in 1892, under the direction of Mr. Owens, who died of fever and was succeeded by Mr. G. B. Gordon.

To quote Dr. Gordon:†

"The area comprised within the limits of the old city consists of a level plain seven or eight miles long and two miles wide at the greatest. This plain is covered with the remains of stone houses, doubtless the habitations of the wealthy. The streets, courts and courtyards were paved with stone or with white cement made from lime and powdered rock, and the drainage was accomplished by means of covered canals and underground sewers built of stone and cement. On the slopes of the mountains, too, are found numerous ruins. On the right bank of the Copan River in the midst of the city stands the principal group of structures—the temples, palaces and buildings of public character. These form part of what has been called for want of a better name the main structure."

The arrangement of this, the first great civic center of the Mayas, may be understood from Maudslay's model. The Copan river has been gradually changing its course until it has washed away a portion of the city, thus revealing the greatest archaeological cross section of history. From this we see that Copan was evidently built upon the remains of a still older city and that the civic center was not predesigned but a gradual development. To quote Gordon again:

"It faces the four cardinal points and its greatest length from north to south is about 800 feet. It is about the same length, east and west. Within the main structure, at an elevation of 60 feet, is a court 120 feet square, which with its surrounding architecture must have presented a magnificent spectacle. The court, itself, is enclosed by ranges of steps or seats rising to a height of 120 feet, as in an amphitheatre; they are built of great blocks of stone neatly cut and regularly laid without mortar. In the center of the west side is a staircase. To the north of the courts stand the two magnifi-

*Memoirs of the Peabody Museum, Harvard University.

†The Century Magazine, January 1, 1898.

cent temples, Nos. 21 and 22, which create the feeling that they are the works of giants. Temple No. 22, in many ways the most interesting I explored, furnishes a typical example of this class of building. All of the interior walls are covered with a thin coat of stucco, on which figures and scenes were painted in various colors and the cornices were adorned with stucco and other ornaments likewise painted . . . . The horizontal arch formed by overlapping stones was always used in the construction of roofs, a type that is common to all the Maya cities. The outside of the building, profusely ornamented with grotesques at every line, bears witness to the ambitious prodigality of the architect, his love of adornment and his aversion to plain surfaces—a characteristic that is manifest on all monuments and carvings at Copan. An elaborate cornice with foliated design adorned with plumage, all beautifully carved, ran around the four sides. Higher up a row of portrait-like busts are also carried around the entire building. Whatever of plain surface remained was covered with pure white stucco, and the same material was used upon the sculptures to give a finish to the carving and a suitable surface for the colors that were used to produce the desired effect."

From Painting by Carlos Vierra
By Courtesy of the San Diego Museum

THE RUINS OF COPAN, LOOKING EAST
HONDURAS.

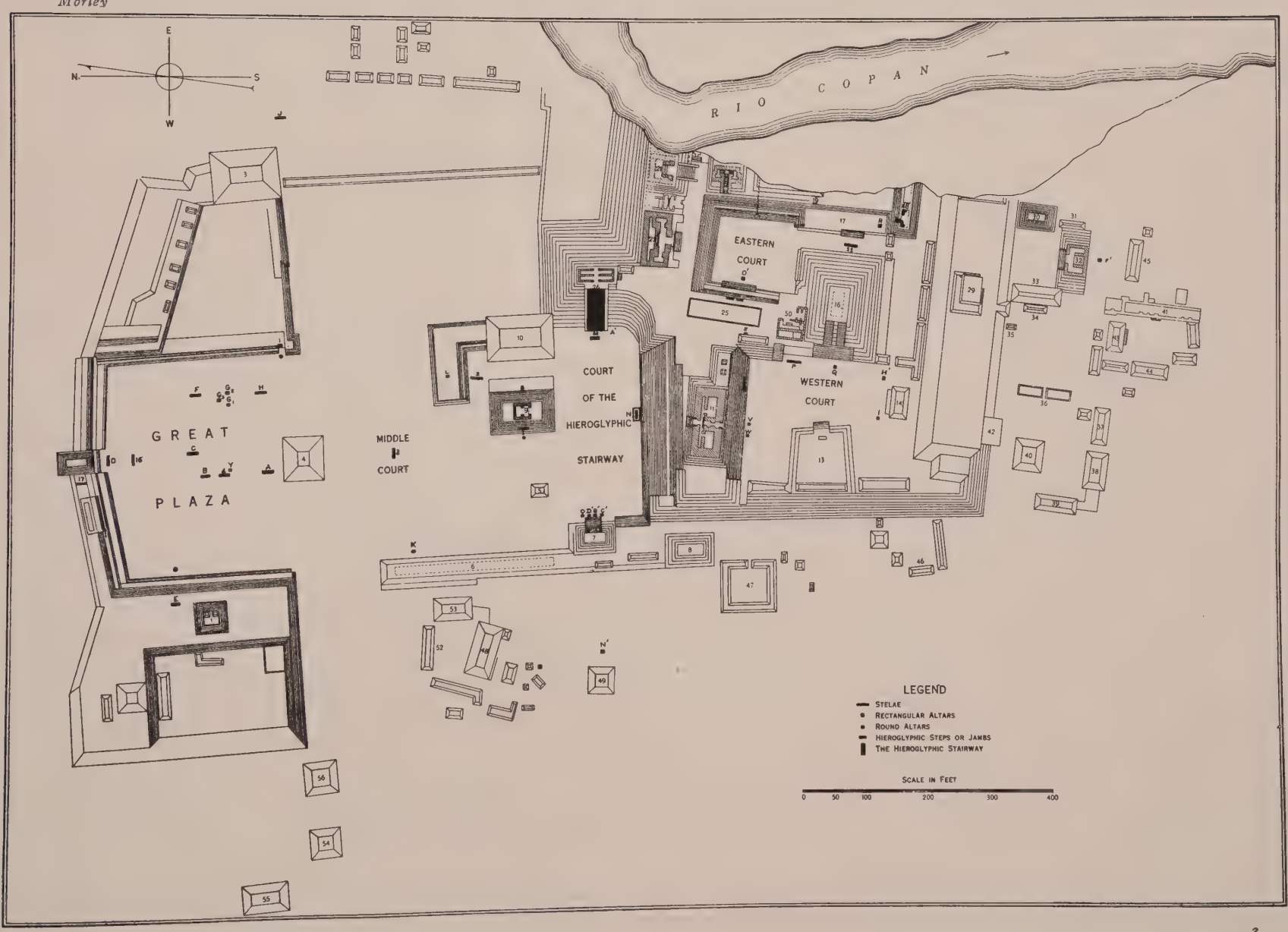
Courtesy of the Pan-American Union.

1.

MODEL OF COPAN.

By A. P. Maudslay.

Morley



Courtesy of the Carnegie Institution.

2.

PLAN OF COPAN.

Honduras.

THE HIEROGLYPHIC STAIRWAY

"The most extraordinary feature that our excavations have yet brought to light is the hieroglyphic stairway already referred to. Facing the plaza at the southern end, it occupied a central position on the western side of the high pyramidal elevation that forms the northern wing of the Main Structure. Even in the sad state of ruin in which we behold it now, it affords a magnificent spectacle. What must it have been in the days when it was entire, and reached from the floor of the plaza to the entrance of the temple that stood on the height a hundred feet above!"

"In these tombs one, and sometimes two, interments had been made. The bodies had been laid at full length upon the floor. The cerements had long since moldered away, and the skeletons themselves were in a crumbling condition, and give little knowledge of the physical characteristics of the people; but one fact of surpassing interest came to light concerning their private lives, namely, the custom of adorning the front teeth with gems inlaid in the enamel, and by filing. Although not all of the sets of teeth found had been treated in this way, there are enough to show that the practice was general, at least among the upper classes; for all the tombs opened, from their associations with prominent houses, seem to have belonged to people of rank or fortune. The stone used in the inlaying was a bright-green jadeite. A circular cavity about one-sixteenth of an inch in diameter was drilled in the enamel of each of the two front teeth of the upper row, and inlaid with a little disk of jadeite, cut to a perfect fit, and secured by means of a bright-red cement."

G. B. GORDON.

The Century Magazine, January, 1898.

Maudslay.

FACE OF STEP OF TEMPLE NO. II. GREAT PLAZA.
(ORIGINAL SCULPTURE NOW IN BRITISH MUSEUM.)
COPAN.

"THE HIEROGLYPHIC STAIRCASE"
FROM RESTORATION BY DR. G. B. GORDON.
DRAWN BY SANDHAM.
COPAN.

Maudslay.

FACE OF STEP OF TEMPLE NO. II. GREAT PLAZA.
(ORIGINAL SCULPTURE NOW IN BRITISH MUSEUM.)
COPAN.
HONDURAS

Courtesy Pan-American Union.

THE TALLEST STANDING STELA, AT QUIRIGUA, GUATEMALA,
26 FEET HIGH.

There is a fallen Stela at this same city which is 34 feet high.

Courtesy of the Peabody Museum, Harvard University.

FIGURE FROM HIEROGLYPHIC STAIRWAY.
(NOW IN PEABODY MUSEUM, HARVARD UNIVERSITY.)

COPAN.
HONDURAS.

"A KING IN ALL HIS GLORY."

Of the series of excavations by the Peabody Museum at Copan, all, with the exception of the first, were conducted by Dr. G. B. Gordon. His field work extended from 1893 to 1900.

Between 1893 and 1900, he excavated the remarkable Hieroglyphic Staircase, all the risers of which are covered by heiroglyphs. At intervals up the staircase were seated human figures as shown in Mr. Sandham's illustrations, Plate V.

The most remarkable of these figures was the great statue found in Situ and shown in the colored illustration on opposite page, entitled, "A King in All His Glory." This is the greatest single find ever made in the Maya area and is as interesting in its way as was the recovery of the Venus de Milo. This statue was complete when found, with the exception of a few inches of the top feathers. An original drawing in monochrome was made of this under Dr. Gordon's supervision by Miss M. Louise Baker.

The coloring of the plate is entirely the work of the author and is based on Maler's and other descriptions of the probable colors used. It is well known that all feather work was colored green, to represent the plumes of the quetzal.

A KING IN ALL HIS GLORY.

Maudslay.

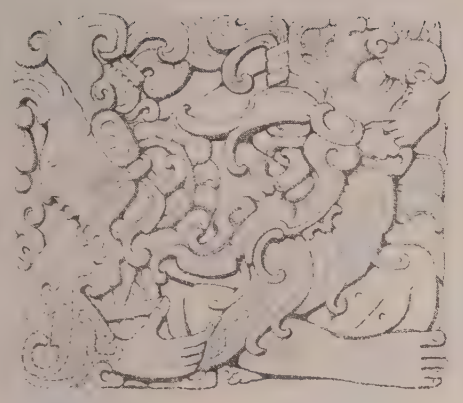
a, *b*, *d*, at Menché.
c, at Tikal.
e, at Copan.
f and *g* at Chichen Itza.

MAYA ORNAMENT.

EXAMPLES OF THE FEATHERED SERPENT

FROM

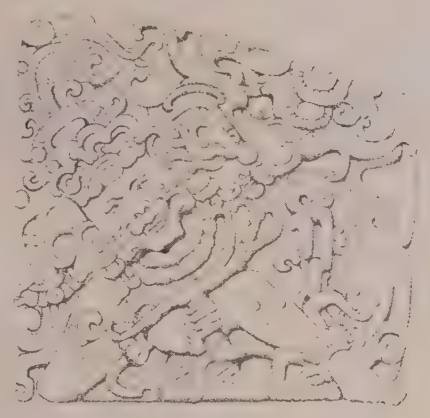
BIOLOGIA CENTRALI-AMERICANA.



d FROM THE EAST SIDE OF STELA D QUIRIGUA.

c FROM THE TUMBLE OF THE FRATRICIDE TWINS

b FROM THE BACK OF STELA H COPAN



f FROM A STONE LINTEL AT MENCHE

g. *from* STELA F QUIRIGUA
h. *from* STELA P COPAN

Maudslay.

MAYA ORNAMENT.

EXAMPLES OF THE SERPENT BIRD.

FROM BIOLOGIA CENTRALI-AMERICANA

"It is only natural to find a race dwelling in the Tropics using the brilliant plumage of birds in personal adornment, but the frequent occurrence of the Serpent Bird appears to indicate that that particular conventional form was invested with sacred attributes. And the preference shown in the use of the wing, especially in headdresses, accounts for much that is otherwise difficult to understand in the carved ornament."—*Maudslay.*

TIKAL

GUATEMALA

TIKAL is in the center of what was once a populous section in the northwestern part of the Department of Peten and was probably the largest of the Maya cities. Its important buildings cover a square mile.

The site is a general plain, with two shallow ravines running east and west. Between these and on either side is a natural hill leveled off and terraced, thus forming three great acropoleis. Tikal was contemporaneous with and the principal rival of Copan. Although the latter city is generally conceded to be the older, one of the stelaes found here is next to the earliest known. Like Copan, it had an important civic center, or perhaps better termed a religious center. There are a number of plazas here, each with one or more pyramids facing them. Two of the great acropoleis have many temples, while the central one was almost exclusively occupied by palaces of the ruler or clergy.

Tikal is one of the most isolated of all the Maya cities and in consequence has been visited less by foreigners than any other. It was hardly known until 1848.

In 1875, Mr. J. W. Boddam-Whetham obtained from the Indians two fragments of carved beams which he presented to the British Museum.

In 1877, it was visited by Dr. Bernoulli, who died on his way home and whose notes are lost. He, however, obtained several of the lintels which he sent to and are now preserved in the Museum at Basle.

In 1881 and 1882, A. P. Maudslay visited and studied the ruins He notes a great number of beautifully carved lintels in probably chico sapote wood. Many of these lintels have since disappeared. A study of the plan, Plate X, will show there were many temples and palaces of great size. The temples are very accurately oriented and different ones face all the cardinal points. Maudslay thinks that this supports the theory that the position of the buildings was due to astronomical considerations. But it is just possible that this orientation may have been due to worship at different times in the day; that is that worship was held only at times when the sun faced the temple. This theory, of course, would not hold with reference to the temple facing the north. On the other hand, it seems very probable that the Mayas held religious services and ceremonials at night as well as in the daytime and it is possible that the primary object of the roof-combs, as stated before, may have been for illumination purposes.

Tikal, the magnificent, with great towering pyramids on the different acropoleis, might be called the *Monumental City of the Mayas.* These great pyramids which were really outdoor altars, are without question the most stupendous altars in the world. It requires little imagination to realize the magnificent spectacular effect of ceremonies being conducted at the entrance to the temple and on the grand staircases leading up to them, with broad plazas far below where thousands of spectators might worship, and witness these spectacles. We know from the bas reliefs and drawings that the robes of the priests and the nobles were magnificent, made of intricately woven materials, ornamented by gold and jade, turquoise and other semi-precious stones, and with headdresses unrivalled by any peoples in the world—headdresses made up in infinite variety of design and elaborated by the feathers of the quetzel and other birds of rare plumage.

Judging from the number of musical instruments, such as the drum, Pl. XCI, whistles, flageolet, fife, flute and numerous other wind instruments, the Mayas must have had a highly developed music.

The pyramids are either square or rectangular in plan, and are also stepped, usually with nine steps, and usually with but one grand staircase, leading up the front to the surmounting temple.

Temple No. 66, however, has grand staircases on all four faces.

It is supposed that those with four staircases were sacrificial temples. So great and massive are the roof-combs that it was

necessary to make the temples of almost solid masonry and consequently the chambers are smaller here than in any other of the Maya temples. Frequently there are three chambers, one behind the other. The plans of the temples are nearly always oblong owing to the roof-combs.

There are several great quadrangular buildings here which may have been the abode of the priesthood or of the rulers. There are also a number of smaller buildings close to the pyramids which are thought to be sacrificial buildings.

Although Tikal, like all the other Maya cities, has been plundered for generations and suffered much from fire, there is still doubtless a wealth of material to be found here when the Government or some great institution undertakes a systematic and exhaustive study of the site. We know from the dated monuments that Tikal is one of the earliest of the classic cities, as well as one of the last to be abandoned during the 7th Century in the northern migration of the Mayas.

In the beauty of the carving of the stelae, lintels, altars and bas reliefs, the sculptural art of Tikal was unrivalled.

NOTES BY MALER

Teobert Maler undertook an expedition to Tikal in 1895 for the Peabody Museum of Harvard University. He made the most exhaustive study that had been made up to that time and his drawings are extremely interesting and his photographs are among the finest that have been taken.

He again visited Tikal in 1904. He describes* a number of temples several stories in height. One building, the palace of five stories, he characterizes as "the most stupendous edifice of the entire group" and he believes it to have been the sacredotal palace belonging to Temple No. 5, opposite, toward which the south façade is turned, the temple itself facing north.

The first two stories are set against the rising hill, and only the last three are free on all sides, Maler says of Temple No. 2, shown in Plate XIII, a restoration of which has been made by the American Museum of Natural History and is shown in Plate XIV, that the facade faces almost exactly east of the magnetic needle.

"A projecting step about 1½ m. high also serves here as the base of the pyramid. The three large and steep steps rising up from it are each about 6½ m. high, having certain horizontal divisions and the usual recessed corners. It is probable (but not absolutely necessary) that the large, slightly sloped sides of the steps had a projecting cornice, which has disappeared.

"The base of this pyramid is, I believe, an equilateral square, each side measuring 34 m. at the first step. The platform on top is 21½ m. square. A stairway about 9 m. wide, before which we found a circular altar but no stelae, leads up from the plaza to the platform upon which stands a substructure 2 m. in height (in front), upon which rises the temple proper. As usual a small front stairway leads up over the middle of the substructure to the entrance of the first temple chamber. The front length of the temple (measured not at the slightly projecting base but from wall to wall) amounts to exactly 13 m. 95 cm. Breadth, measured from the central line of the structure, is 10 m. 51 cm.

"The doorway is 225 cm. wide and 265 cm. high and was formerly spanned by five strong sapote beams, which, alas! have been wantonly torn out, causing a great mass of masonry to fall down, together with the frieze and vaulting resting upon it. Whether the sapote beams were carved on the under side and what has become of them, nobody can tell.

"The first temple chamber is 485 cm. long and 115 cm. wide.

"A low step 215 cm. wide leads through a doorway into the second temple chamber. This entrance was spanned by five beams of sapote with very fine carving on the under side. All these beams were torn out by plunderers of this temple and three were carried away.

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*Memoirs Peabody Museum, Harvard University, Vol. V.

"The second temple chamber is 495 cm. long by 100 cm. broad.

"Another low step brings one to the third temple chamber through a doorway, 193 cm. wide, spanned by six perfectly plain sapote beams. The third temple chamber is 350 cm. long and 94 cm. wide. The height from the floor to the narrow truncation of the very steep, wedge-shaped vaulting is 520 cm.

"The frieze on the east facade doubtless had three great decorative carvings, one in the middle over the doorway, and one at each corner which, as usual, turn the corner to include on the other side the wall of the narrow ends of the structure.

"Receding to the width of the terrace-roof of the front apartment of the temple, rises the enormous roof-comb, probably in three sections, of which the top one has fallen down. The roof-comb shows on its east side the most elaborate carving of figures it is possible to imagine. It is probable that below all this was a conventionalized gigantic face constructed of stones and stucco. If this supposition is correct then the circular design with its pendants, on either side of what was once the giant face, can be regarded as its ear-ornaments."

(Notes from Maler)

"As it may interest some readers to compare the height of the five Great Temples, I give them as follows:—

Great Temple I. Facade facing west. Height of pyramid, 29½ m. Height of temple, 17.7 m. Total, 47.2 m.

Great Temple II. Facade facing east. Height of pyramid, 21 m. Height of temple 22½ m. Total, 43½ m.

Great Temple III. Facade facing east. Height of pyramid, 32½ m. Height of temple, 21.7 m. Total, 54.2 m.

Great Temple IV. Facade facing east. Height of pyramid, 45 m. Height of temple, 24.7 m. Total, 69.7 m.

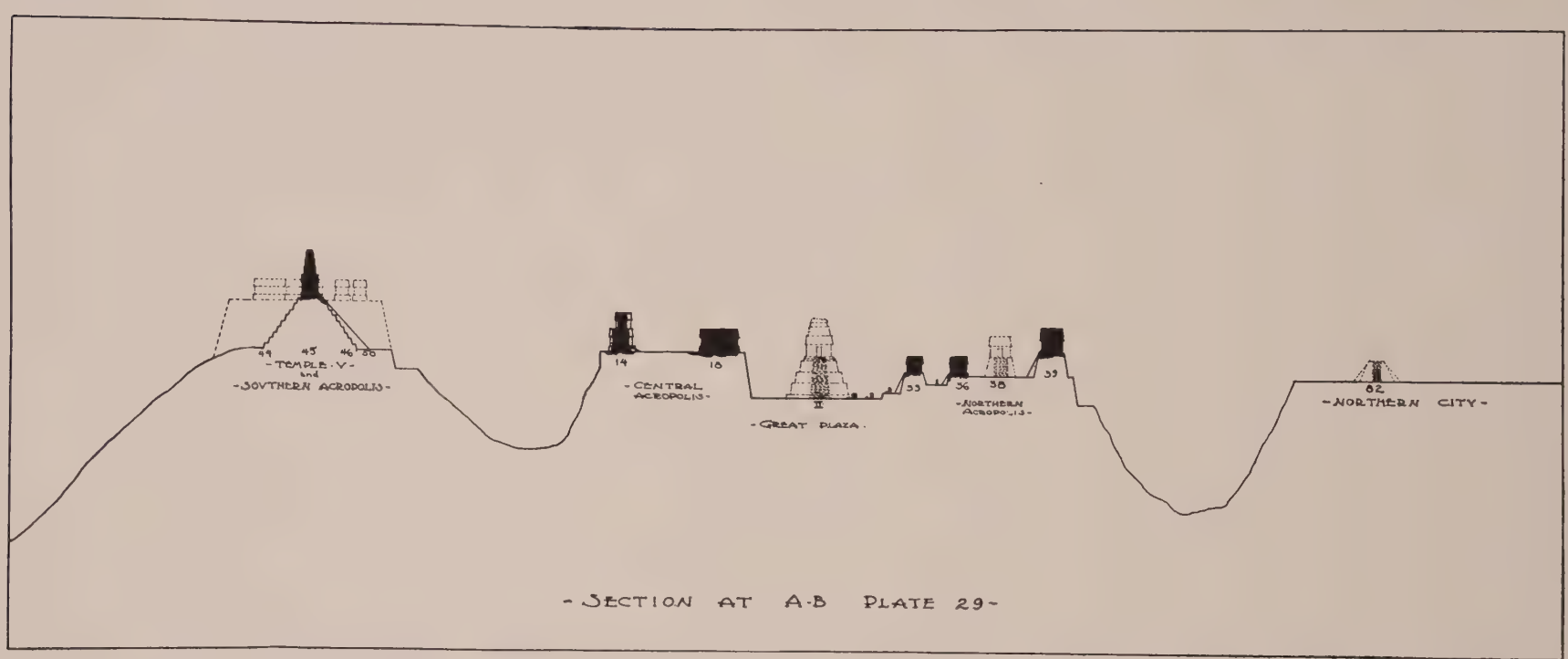
Great Temple V. Facade facing north. Height of pyramid, 35½ m. Height of temple, 21.8 m. Total, 57.3 m."

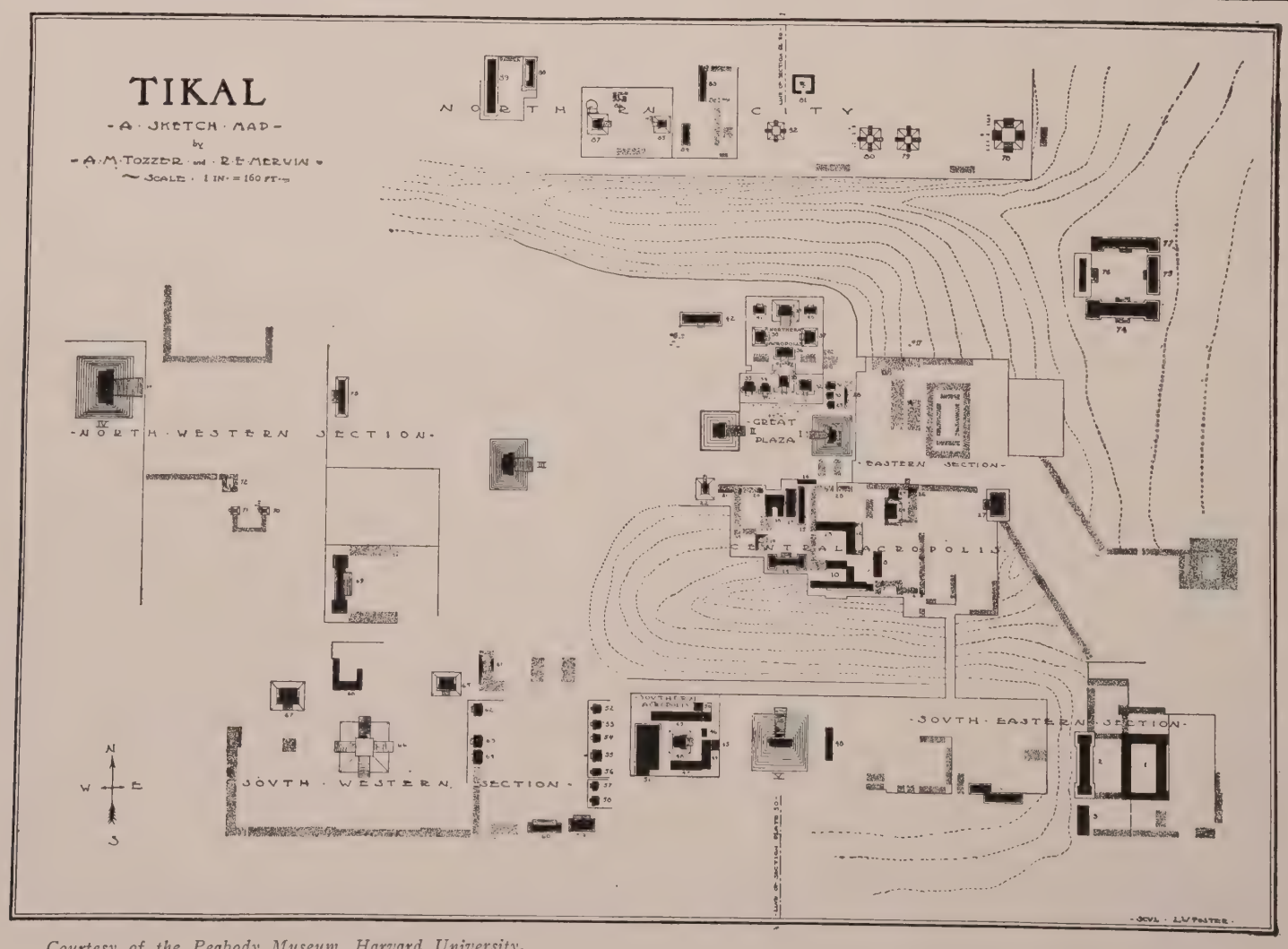
Maler states that the walls of the chambers of the principal structures of Tikal are generally covered with the finest white stucco, upon which are writings and drawings and incised drawings made presumably with a pointed flint or obsidian knife.

In 1910 the Peabody Museum sent out another expedition to Tikal to enlarge upon Maler's work. This was in charge of Dr. Alfred M. Tozzer and was eminently successful. The map prepared at that time is the best that has been published of the city. This expedition prepared many plans, and took innumerable photographs.

From a painting by Carlos Vierra.
Courtesy of the San Diego Museum.

TIKAL.
GUATEMALA.





Courtesy of the Peabody Museum, Harvard University.

CIRCULAR ALTAR.

TIKAL.

TIKAL. CIRCULAR STONE.

Altar No. 5, the most remarkable stone of the ruins. It was discovered at some depth and will probably become as famous as the Calendar stone of Mexico. Its seclusion in a little court with a single entrance proves that a large number of spectators could not possibly have witnessed the ceremonies performed near it and is indicative of its special sacredness. One of the prominent figures is that of a deity holding in his right hand, against his breast, a staff, and in his left hand, hanging down at the side, the pointed sacrificial knife of flint with strips of leather suspended from the handle.

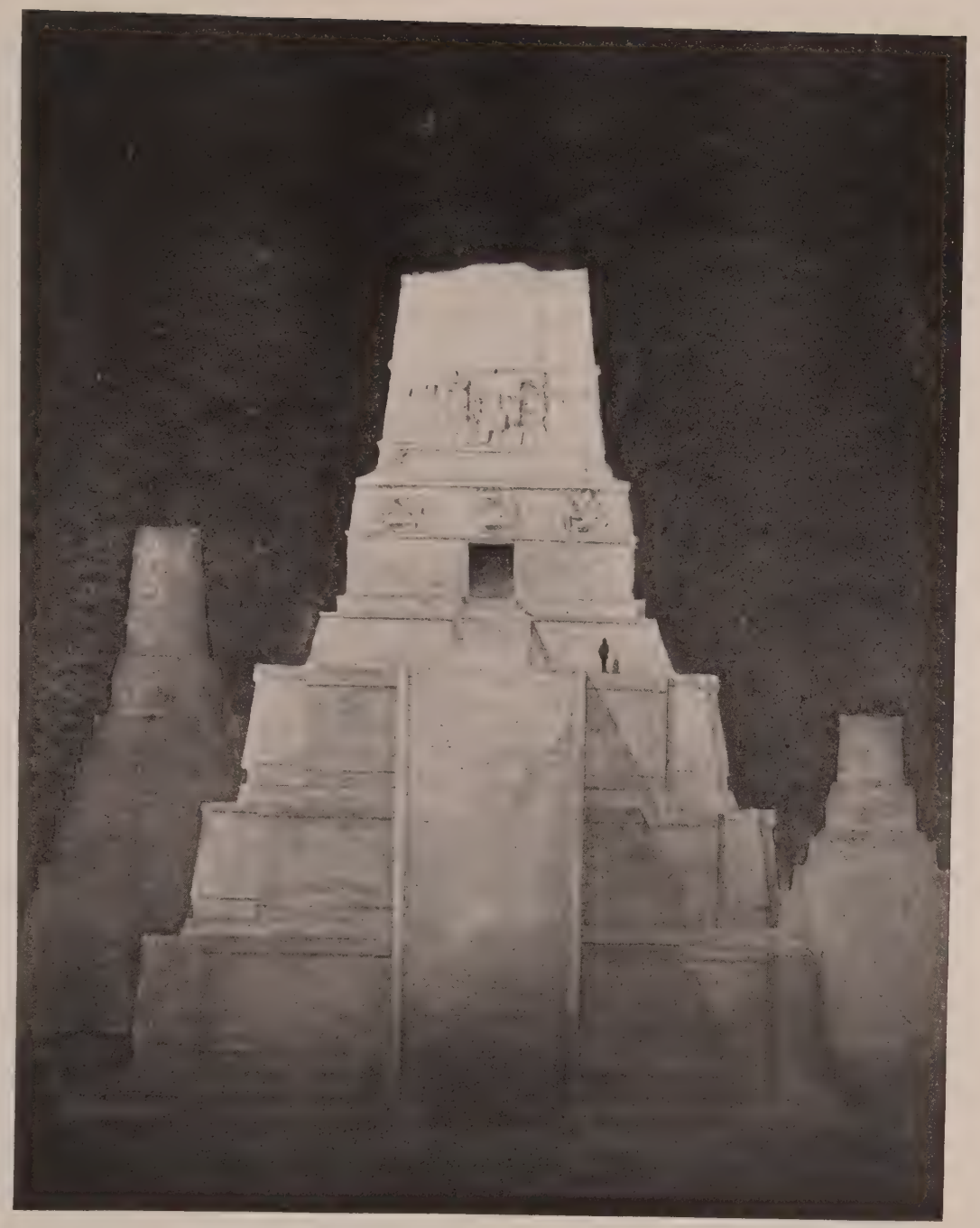
Maler.

Courtesy of the American Museum of Natural History, New York.

TEMPLE NO. II.
TIKAL.

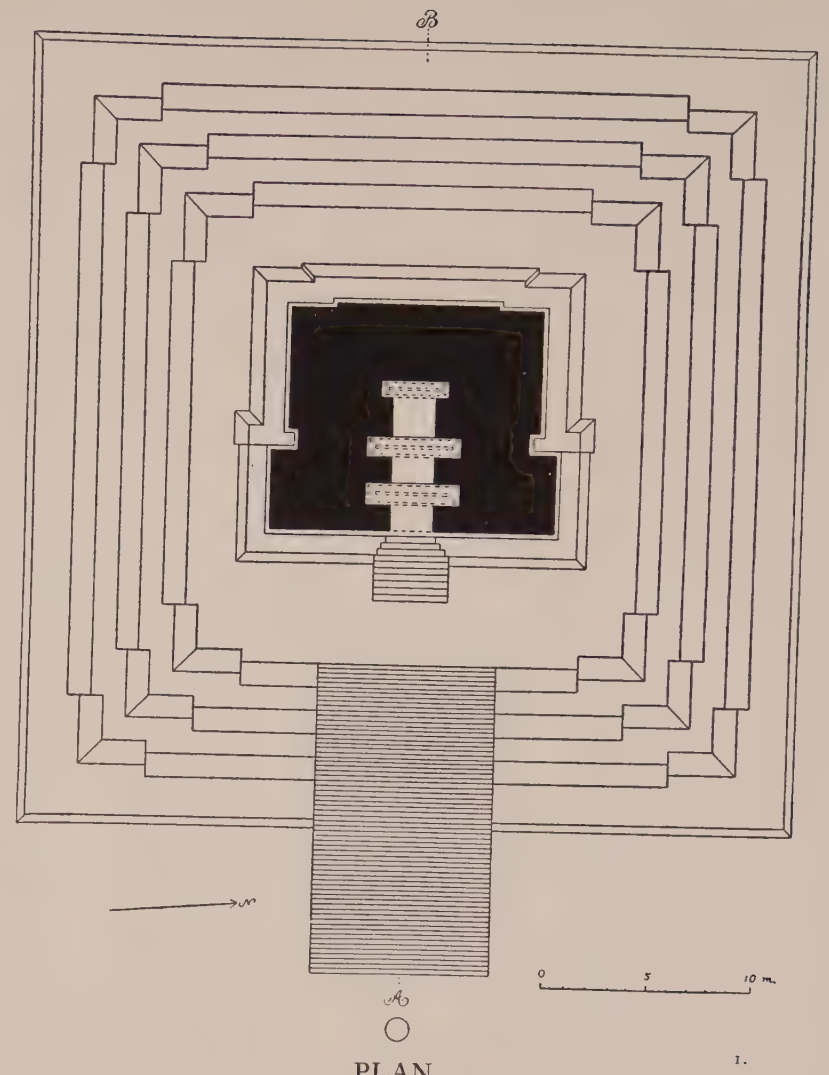
Courtesy of the Architectural Record. *Maler*

MENCHE OR
YAXCHILAN

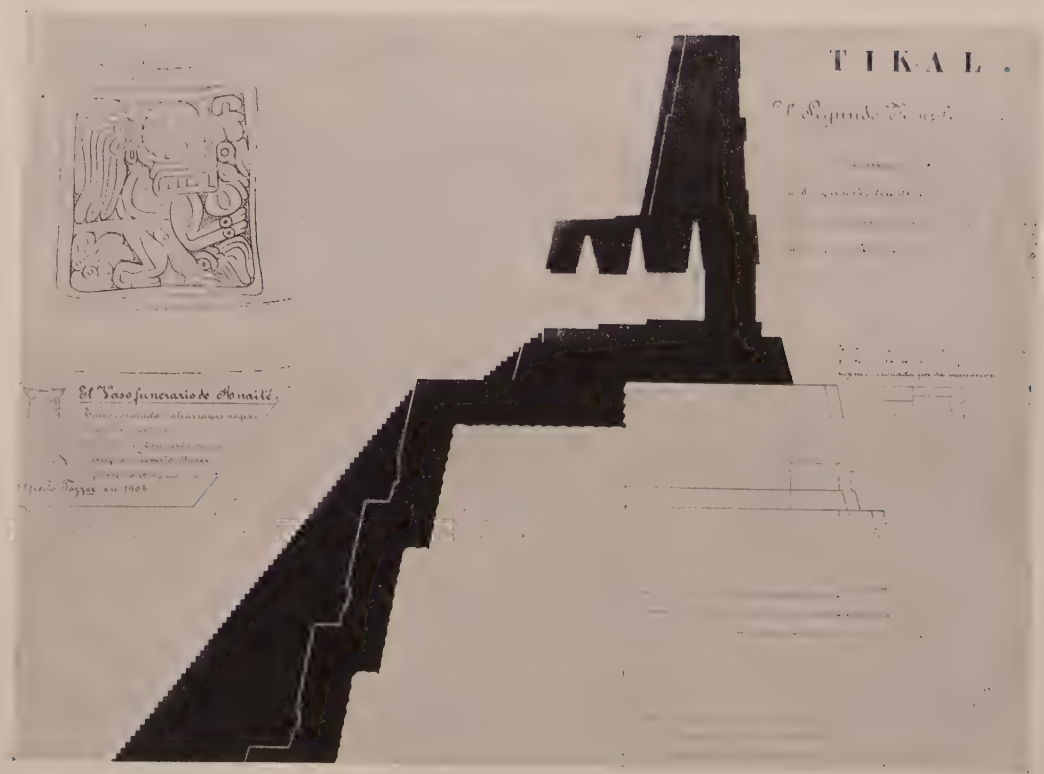


Courtesy of the Architectural Record. 2.

RESTORATION DRAWING
OF
TEMPLE NUMBER II.
TIKAL.



PLAN. 1.



SECTION. 3.

Courtesy of the American Museum of Natural History, New York.

Model Prepared by
The American Museum of Natural History, New York
of
Great Temple Number II.
Facade Faces East. Height of Pyramid 21 M.
Height of Temple 22½ M. Total, 43½ M.
(Temple Number IV. is 69.7 M. High.—The Tallest Maya Building.)
Tikal.
Guatemala.

THE TUXTLA STATUETTE.

"The Oldest Dated Antiquity in the New World B. C. 96"

"This important specimen was found near San Andres Tuxtla in the state of Vera Cruz, Mexico in 1902 and was acquired by Dr. W. H. Holmes for the National Museum the following year. It is made of jadeite and represents the figure of a birdlike deity with a human head. The front and sides are inscribed with Mayan hieroglyphics which places it as a product of some branch of the great Maya race of Central America and Southern Mexico that developed the most brilliant aboriginal civilization of the ancient America.

Its paramount importance lies in the fact that the date expressed by the column of bars and dots down the front: 8. 6. 2. 4. 17. 8 Caban O Kankin in Mayan Chronology corresponds to B. C. 96 which makes it the earliest dated archaeological specimen in the New World."

Inscription on the Statuette in the National Museum, Washington, D. C.

Long, in the "Journal of the Anthropological Society of England and Ireland," places the Tuxtla Statuette at 8-6-2-4-17-8 Caban O Kankin, corresponding to 20th July, 368 B. C.

ZAPOTECAN FUNERARY URN.
Showing Strong Renaissance
Maya Influence.

Courtesy of the National Museum, Washington, D. C.

THE TUXTLA STATUETTE.
"The Oldest Dated Antiquity in the New World."

Courtesy of the Hon. Robert Lansing.

ZAPOTECAN FUNERARY URN.
Showing Strong Renaissance
Maya Influence.
From the Collection of the Late
Honorable John W. Foster.

ONE OF THE FOURTEEN GREAT STONE MONUMENTS OF QUIRIGUA

The ruins of Quirigua are located in what is now the Department of Izabel, Guatemala. The city was at its height between the years 472 and 551 A.D. and was probably founded as a colony of Copan, the great Southern Maya Metropolis, thirty-five miles to the southeast.

Many of the commemorative stones found here took the form of animals and reptiles. This monument with the general form and head of a turtle is known as "The Great Turtle". It is 7 feet 3 inches high and weighs about 20 tons.

It is covered with a very remarkable and elaborate conventional symbolic design. On the rear end of the turtle is a human figure sitting cross-legged. In the right hand is held a manikin sceptre and the left a tasselled shield. The monument is described in detail by Maudslay in "Biologia Centrali Americana."

Drawn by A. P. Maudslay. 3.

FIGURE ON THE REAR END OF THE GREAT TURTLE.
QUIRIGUA.

Courtesy Pan-American Union. 1.

SIDE VIEW OF THE GREAT TURTLE, QUIRIGUA.
ONE OF THE FIVE YEAR PERIOD MARKERS OF ALMANACS OF STONE

Maudslay. 2.

THE GREAT TURTLE.
QUIRIGUA.

1.

Stela I. Back.
Quirigua.

Maudslay. 2.

STELA D. NORTH FACE

Height 19 ft. 6 inches. Width 5 feet, and thickness 2 ft. 10 inches.
Quirigua.

The pedestal is in the form of a grotesque head, above a full length figure with enormous headdress, very similar to Copan Stela. A scepter is usually held in the left hand of these figures. This shows plainly in the photo. There is a similar figure on the opposite face. On each side are glyphs, one with the Initial Series. Maudslay reads this: 9th Cycle; 16th Katun; 15 Ahan; a full count of Chuens; a full count of Days; 7 Ahan; 18 Pop.

Courtesy of the Peabody Museum, Harvard University. 3

Stela 10.
Seibal.

LINTEL 2. YAXCHILAN.

82 cm. by 91 cm.

A high priest or Ahaucan stands before an altar of glyphs. The priest holds an ornamental cross in each hand.

He wears a priest's hat and is richly attired.

There is a second priest also elaborately dressed.

Color.—Maler says:* "Entire border is a fine blue, all the glyphs are bright red, and background dark red; the flesh of the two personages bright red; the garments, omarets, and their pendants are either green, or bright red or composed of alternating red and green. For example, the capes and cuffs of scales are green (mostly a dark bluish green); the faces of the medallions are red, and their edges red and green.

As to the large green hats of the priests with their accessories —the calpac-shaped main portion is *always green,* all the scroll work is composed of red and green, the jaw and eye formation being always red. The superimposed human heads are red; the serpents green; the featherwork mostly green, but occasionally blue. The St. Andrew's cross (X) behind the Ahaucan's head is green; the quetsal birds are, of course, green; the crosses red, their round flowers red and green, their appendages green."

*Memoirs Peabody Museum, Vol. II.

Maler. 1.

STELA 1.

Upper portion of Stela, lower portion two kneeling figures.
A beautiful and delicate bas relief, showing
great skill in composition and perspective.

LA MAR.

Courtesy of the Peabody Museum, Harvard University. 2.

STELA 30.
NARANJO.

Maler. 3.

LINTEL 2.
YAXCHILAN.

LINTEL NO. 2, PIEDRAS NEGRAS

Discovered by Teobert Maler in 1895. The slab is 129 cm. long.

The principal figure is a warrior chieftain richly dressed and wearing a great helmet with plumes of feathers.

In his right hand he holds what appears to be a ceremonial staff or possibly spear and in his left a shield.

Behind him stands his adjutant or assistant, also richly attired.

The six kneeling warriors in front, from the richness of their apparel, are doubtless officers of considerable rank.

The numerous glyphs, six large and 105 smaller ones, have not been deciphered. It would be extremely interesting to know what they refer to, whether to instructions given, to events past, or possibly to some great achievement at arms.

STELA 11. DEITY SIDE, YAXCHILAN.

Human Side: On the opposite side of this stela are two warriors of high rank standing opposite one another.

Deity Side: Soothsaying priest with mask, three plebians, above two little figures and twenty glyphs.

STELA. 13. PIEDRAS NEGRAS

About 3 m. high, discovered by Maler.

Traces of red discernable only on the face, the pouch and the girdle. All other colors have disappeared.

Richly dressed personage scattering cocoa-beans, the symbol of prosperity.

Courtesy of Peabody Museum, Harvard University.

LINTEL NO. 2.

PIEDRAS NEGRAS.

From the Original in Peabody Museum, Harvard

Stela 11.
Deity Side.
Yaxchilan.

Stela 13.
Piedras Negras.

PALENQUE

Central Chiapas

PALENQUE, situated among the beautiful Tumbala foothills of Central Chiapas, is unique and different from any of the other Maya cities—it should be called Palenque, the Beautiful.

There is a mystery and grandeur about the ruins set in the midst of a tropical forest, that is like a glimpse into fairyland.

Tradition tells us nothing of the ancient inhabitants so that the little we know has been gleaned from a study of the glyphs and the monuments.

The early Spanish explorers did not seem to know of its existence. It was discovered in 1750, and was explored in 1787 by Capt. Antonio del Rio, whose accounts were published in London in 1822 and naturally excited great interest.

The name Palenque or Palenke means in Spanish, stockade. It was at first called Casa de Piedras.

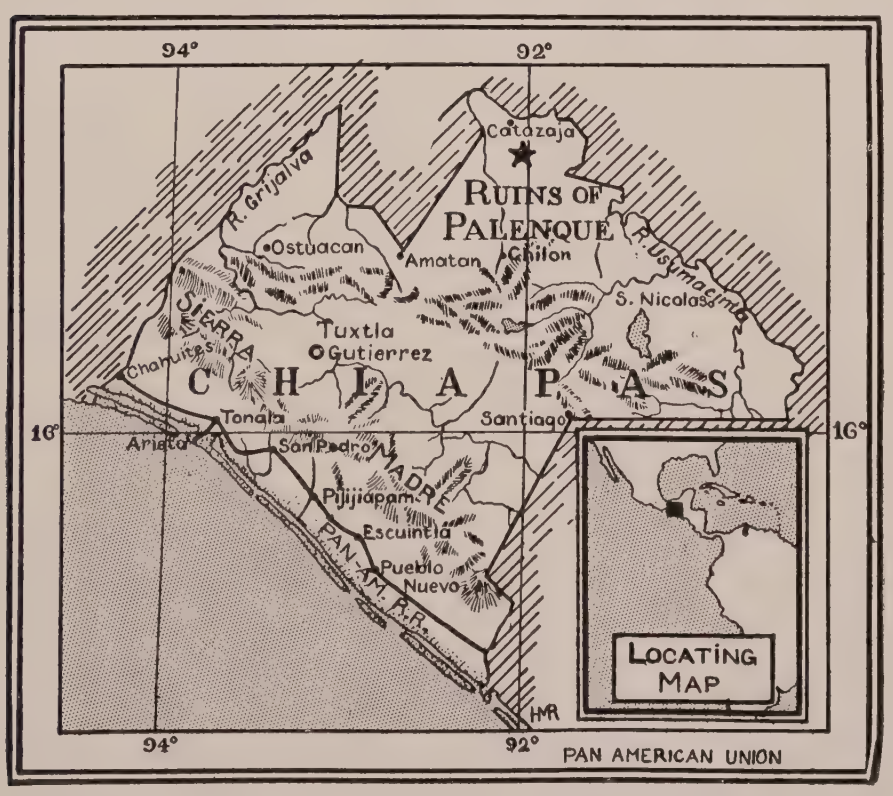
The other early explorers were Dupaix, de Waldeck, and Stevens, and later Charney, Kingsborough, Holmes, and Maudslay. Each has given us much information and many valuable and beautiful photographs and drawings.

While the architecture of Tikal is the most monumental and imposing of any of the Mayan cities, that of Palenque has the greatest delicacy and graceful beauty of detail. There is something appealing and almost modern about it that makes it easier for us to understand than any other architecture we know of the Ancient Americas.

Morley places the foundation of Palenque during the Middle Period 9.10.10.0.0, while Spinden believes the stucco work at least to be very late and to date about 9.18.0.0.0., notwithstanding the fact that there is a glyph on one of the steps of the Palace which reads 9.8.9.1.3—08 Ahan 13 Pop. Should either Morley or Spinden be correct the city could not have been occupied for any length of time as the whole Southern Maya field was abandoned by 9.18.5.0.0. —or at least that is the latest date found in the Southern area, on Stela 12 at Piedras Negras.

The artificial acropoleis and gigantic terraces at several of the classic cities are monumental and imposing, but the slopes of the valley at Palenque are so moulded and formed into terraces about the important buildings and for some distance beyond, as to be the work of truly great landscape artists.

Although the city is supposed to have been of great extent there are but few remaining buildings. These have a distinct character of their own and they possess many unique features.



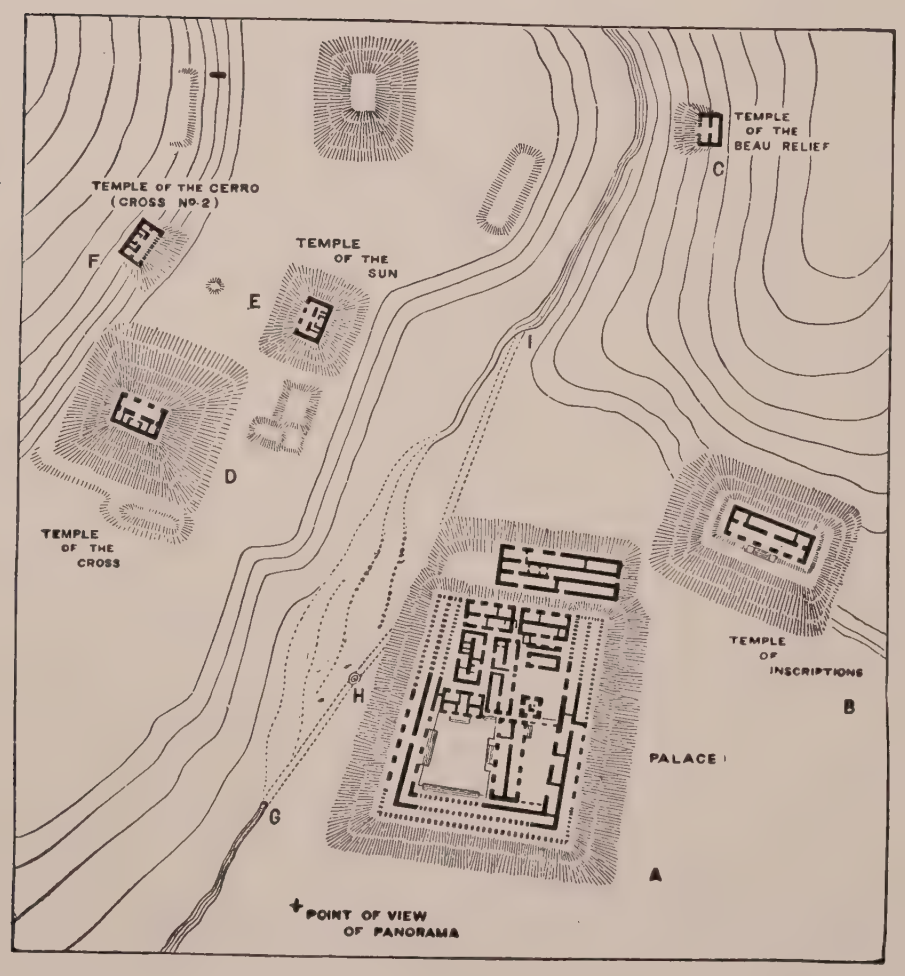
Courtesy of the San Diego Museum.

BIRDS EYE VIEW OF THE PALACE.

From a Painting by Carlos Vierra.

PANORAMA OF THE RUINS.

By Dr. W. H. Holmes.



PLAN.

PALENQUE

CHIAPAS

THE PALACE

PALENQUE

The largest and most imposing structure is the so-called palace. It is not known whether this was the Royal residence or a religious community building. Maudslay and others are inclined to the latter opinion.

It stands on an artificial terrace, according to Catherwood 310 feet by 260 feet and 40 feet high, with staircases on four sides. The building itself measures 180 feet by 228 feet and is 25 feet high.

It doubtless originally had only one great court, but many additions were made to it until finally it contained three courts as shown in the plan. Plate XX. The façades facing these courts had many openings and as the space behind was continuous, they thus formed galleries.

A charming stream of limpid water flows through the valley at the foot of the palace terrace. There are remains of a subterranean passage that led from the palace to what was probably a swimming pool in the river below.

In the majority of the Maya cities the sculpture was in stone, but due to the coarser quality of stone found here the sculpture was in stucco. There is much well preserved color everywhere, showing that the building was entirely decorated in color both in the interior and on the exterior.

Catherwood states that the paintings were similar to the frescoes of Italy—water color applied to cement. By cement he probably meant stucco, as cement was unknown to the Mayas.

A restoration of the building is shown in Plate XXI, but it can hardly do justice to it. The most prominent object is the tower. This was supposed to have been four stories in height and is a very unusual feature, as there are but few examples in Maya architecture. There is a round tower, the Caracol, at Chichen Itza and there was supposed to have been one or more square ones at Mayapan.

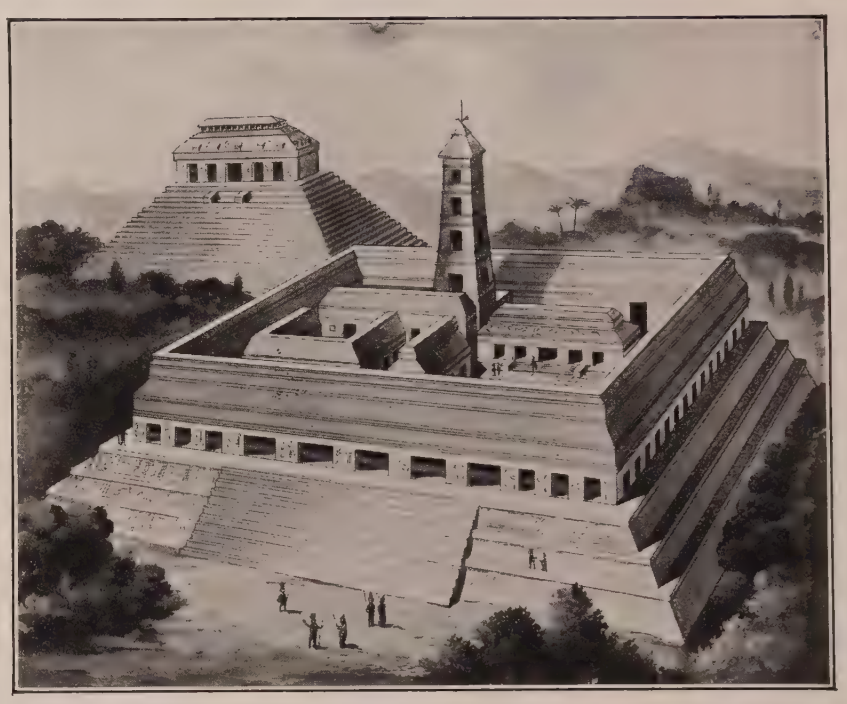
The description and drawings by Maudslay, in the Biologia Centrali Americana, and by Holmes, Archæological Studies Among the Ancient Cities of Mexico, are very complete and interesting.

Maler. 2.

FAÇADE UPON THE LARGE COURT. PALACE, PALENQUE.

Drawn by de Waldeck. 4.

ELEVATION OF THE ABOVE.

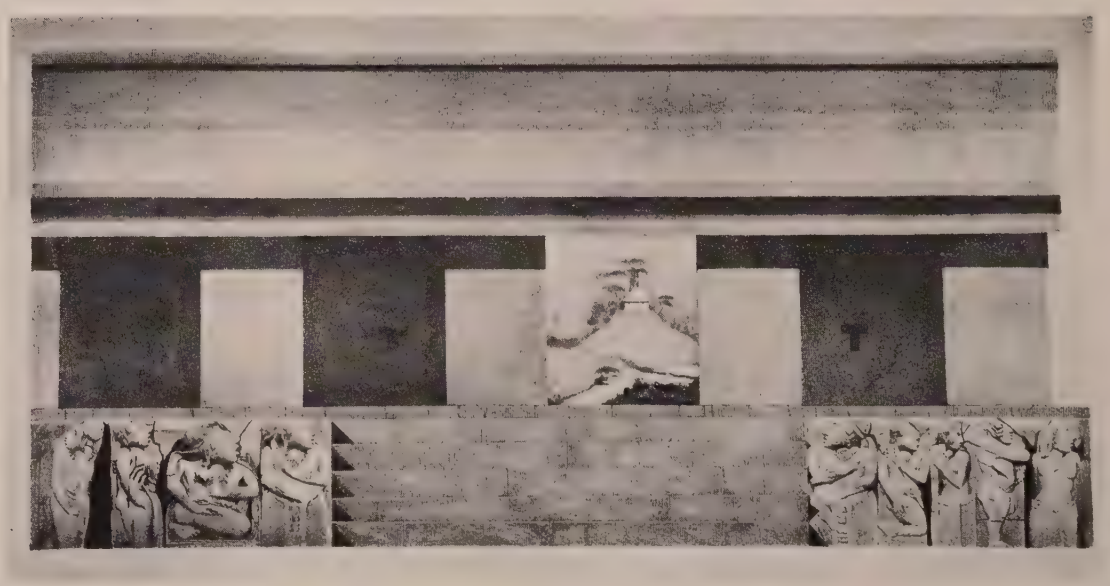


1.

RESTORATION OF THE PALACE, PALENQUE.
FROM MONUMENTS ANCIENS DU MEXIQUE.
TEMPLE OF THE INSCRIPTIONS IN THE BACK GROUND.

3.

TOWER COURT.



Drawn by de Waldeck. 5.

ELEVATION OF SMALL COURT.
THE PALACE.
PALENQUE.

Drawn by de Waldeck.

UNIQUE ARCH BETWEEN PORTICO AND INNER CHAMBER.
THE PALACE,
PALENQUE.

TYPICAL MAYA INTERIOR.

This beautiful bas relief, drawn by de Waldeck, is on the rear wall of the Temple of the Beau Relief, Palenque. It depicts a single figure, nearly life size, seated in graceful pose upon a throne, which terminates right and left in tiger heads, the conventional angular seat being supported by two legs modeled to represent feet of the animal.

There has been some scepticism about this drawing. It is thought that de Waldeck drew somewhat upon his imagination, as the figure which is in plaster has now become so mutilated as to be almost unrecognizable. But Dr. Holmes, who saw the figure in 1894, states it was in good condition at that time and that in his opinion it is "an excellent interpretation if not an entirely satisfactory copy of the work."

3.

2.

1.

Drawn by de Waldeck.

TERRA COTTA FIGURES.
1 Found at Tobasco. 2 and 3 at Palenque.

Drawn by de Waldeck. 4.

STATUE OR CARYITIDE
PALENQUE.

Drawn by de Waldeck. 5.

TEMPLE OF THE BEAU RELIEF.
PALENQUE.

6.

BAS RELIEF.
ALTAR.
ALSO SHOWN ON PLATE XXV.
TEMPLE OF THE SUN.
PALENQUE.

THE TEMPLES

Palenque

The plan of the Temple of the Sun, the Cross, and the Foliated Cross are almost identical. Plate XXVI. They contain an open portico, behind which are three chambers, the central one containing the sanctuary and altar. On the wall over the altar each contains a famous bas relief—from which the temples receive their name.

The Temple of the Beau-Relief has over its altar the seated figure of possibly the ruler or High Priest of Palenque. This has been made famous by Waldeck's wonderful drawing shown in Plate XXIII.

The Temple of the Inscriptions is the largest of the Palenque temples. Plate XXVI.

The most unique feature of these buildings is the roof with its roof comb. While roof combs were quite general during the Classic Period at no other place have they been so successfully treated. Here the roofs have a double slope not unlike the Mansard roofs of France, over the center of which rises the great roof comb. This is a vertical wall pierced by many openings richly decorated by sculptural ornament—a very difficult problem is handled in a masterful way.

These temples all surmount pyramids, the facings of which have almost entirely disappeared—possibly as material for other buildings. The pyramids are supposed to have been built up of small steps on all four sides as shown in Plate XXVIII.

The buildings at Palenque with their graceful lines and brilliant rich colors, must before their destruction have been beautiful indeed!

Maudslay. 1.

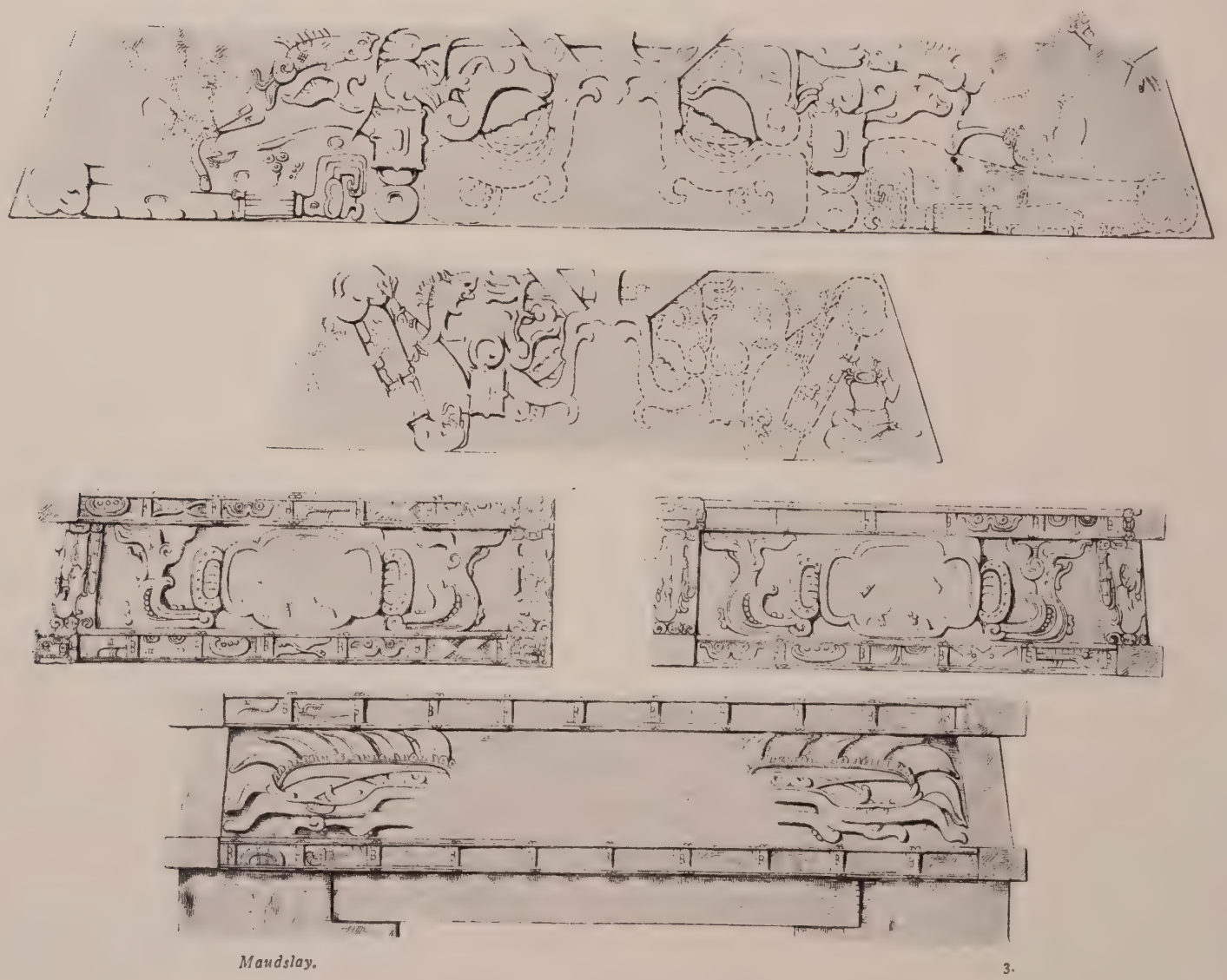
TEMPLE OF THE SUN, FROM THE EAST.

PALENQUE.

Courtesy Architectural Record. 2.

MODEL TEMPLE OF THE SUN.

IN THE AMERICAN MUSEUM OF NATURAL HISTORY, N. Y.



Maudslay. 3.

DETAILS OF ORNAMENT.

ALTAR.

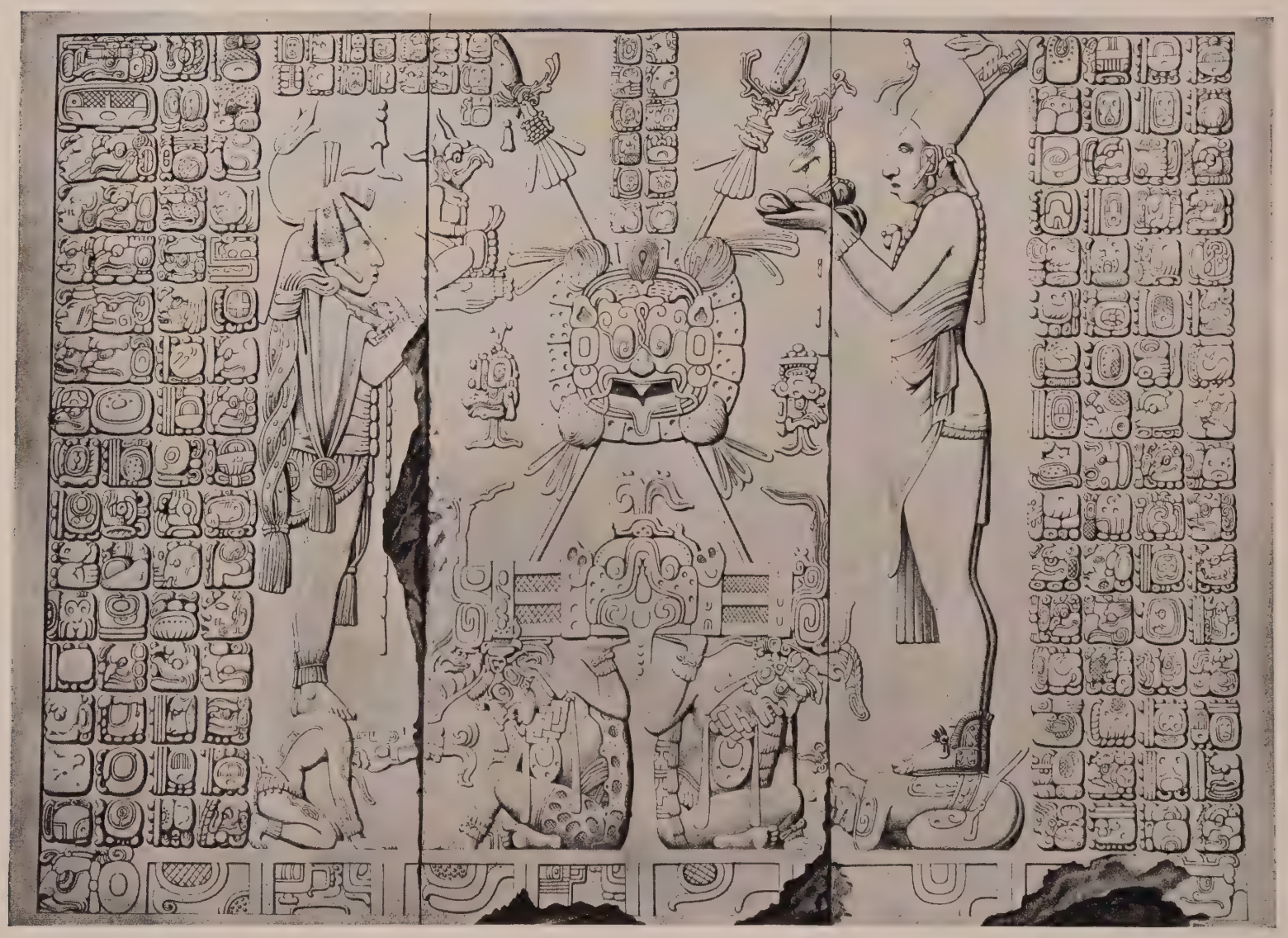
TEMPLE OF THE SUN.

PALENQUE.

From Drawing by F. Catherwood.

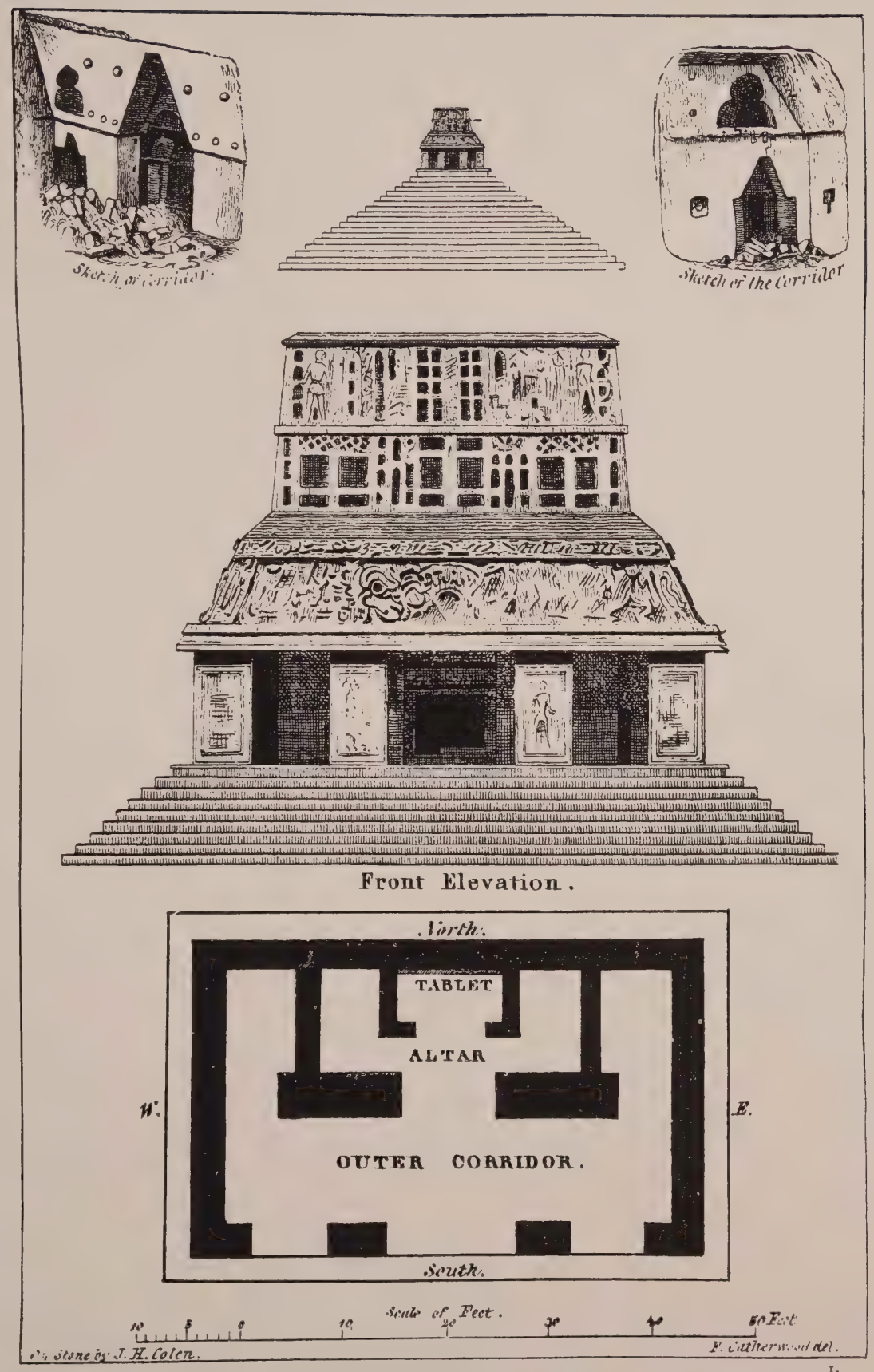
1.

ALTAR.
TEMPLE OF THE SUN.
PALENQUE.



2.

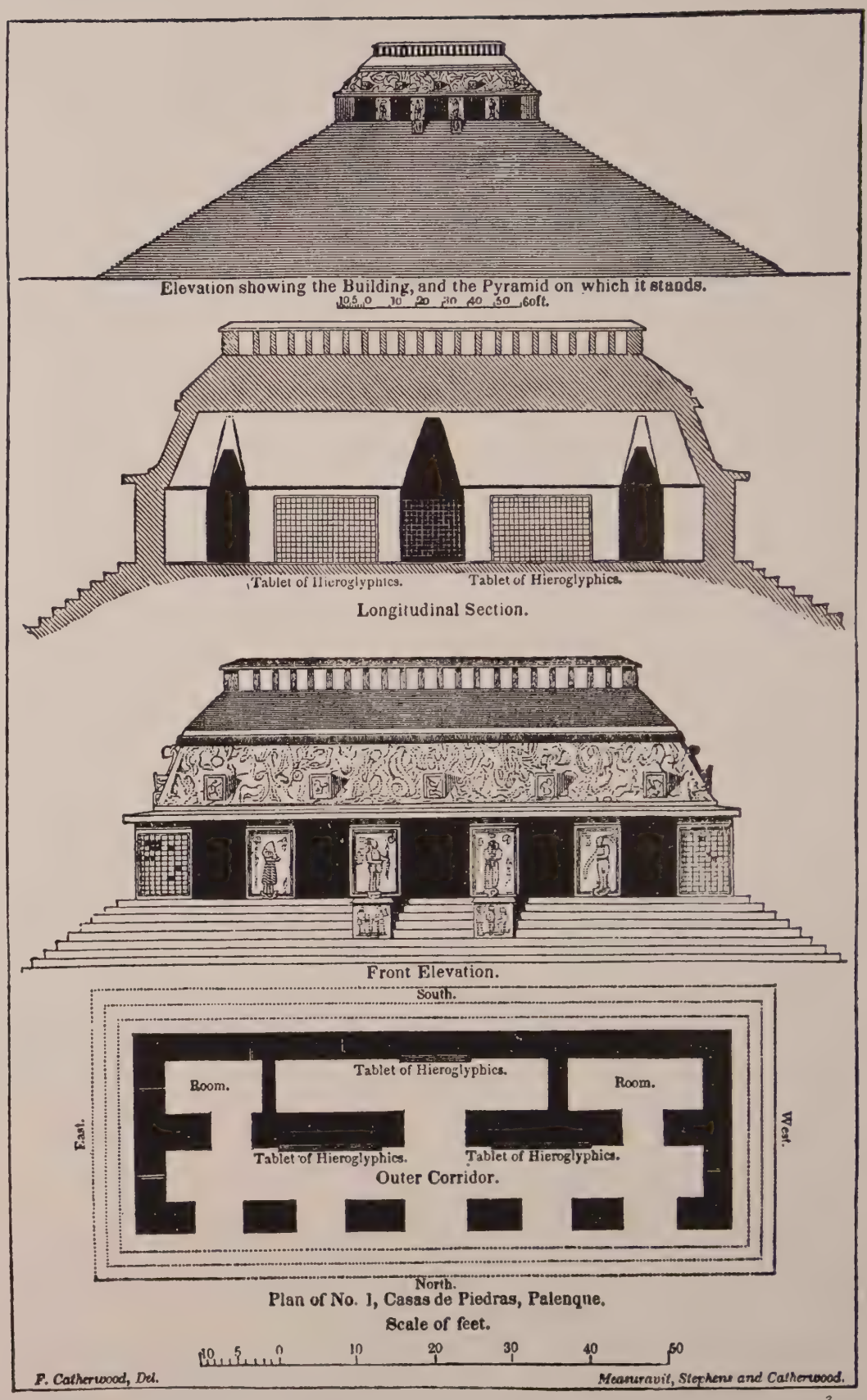
BAS RELIEF ON REAR WALL OF ALTAR.
TEMPLE OF THE SUN.
PALENQUE.



Front Elevation.

1.

TEMPLE OF THE CROSS.
PALENQUE.



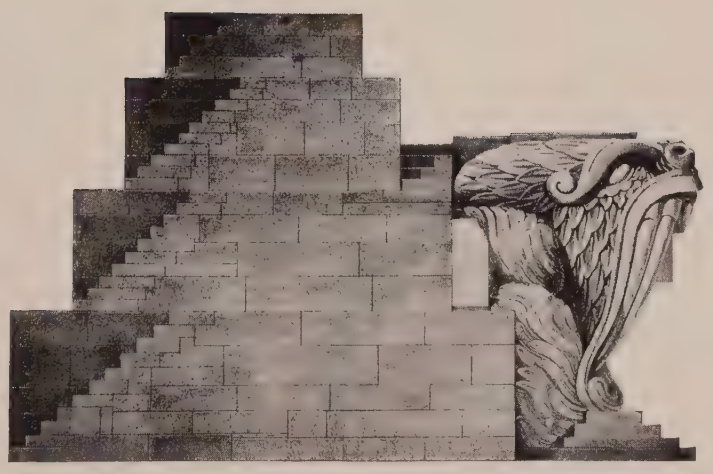
2.

NOW CALLED TEMPLE OF THE INSCRIPTIONS.

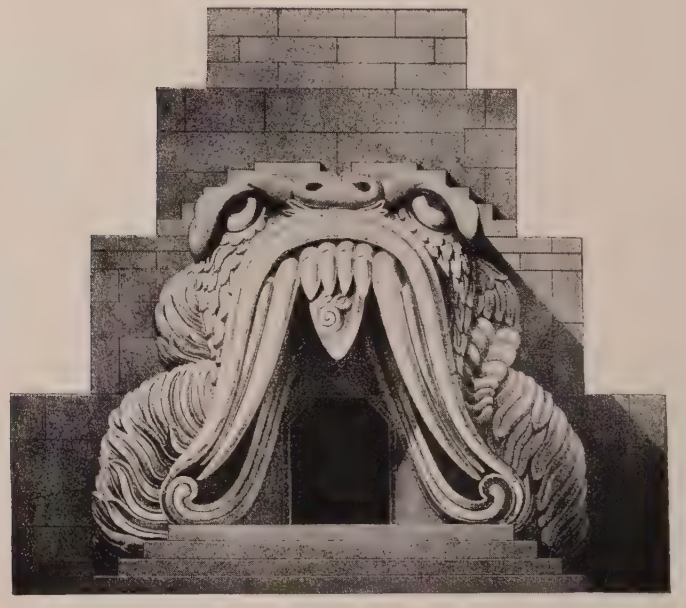
From Incidents of Travel in Central America, Chiapas and Yucatan,
By John L. Stephens.

Drawn by de Waldeck. 1.

TEMPLE OF THE CROSS
PALENQUE

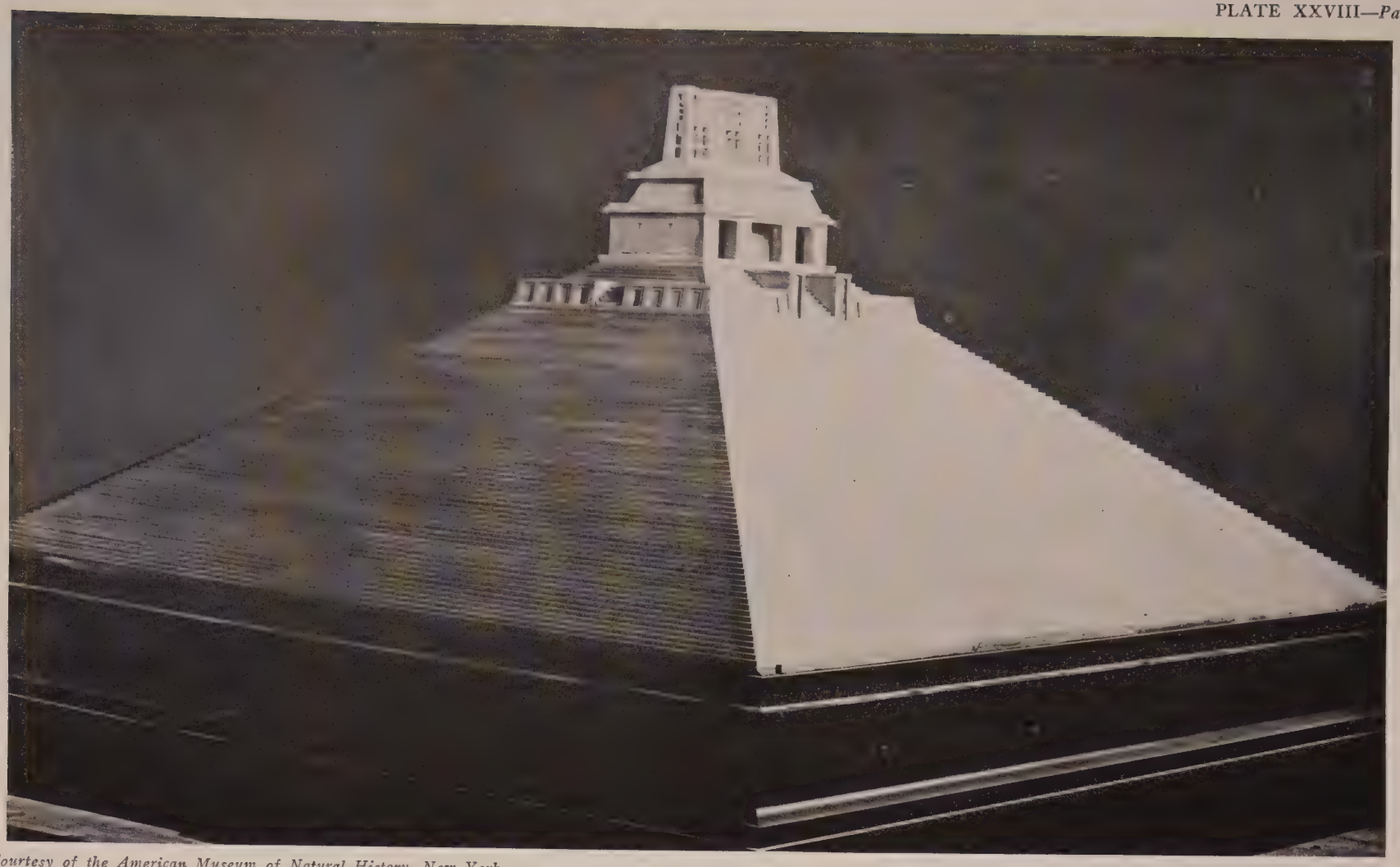


Drawn by de Waldeck. 2.



3.

MINIATURE MODEL IN TERRA COTTA
REPRESENTING A TEMPLE.
Collection Uhde.



Courtesy of the American Museum of Natural History, New York.

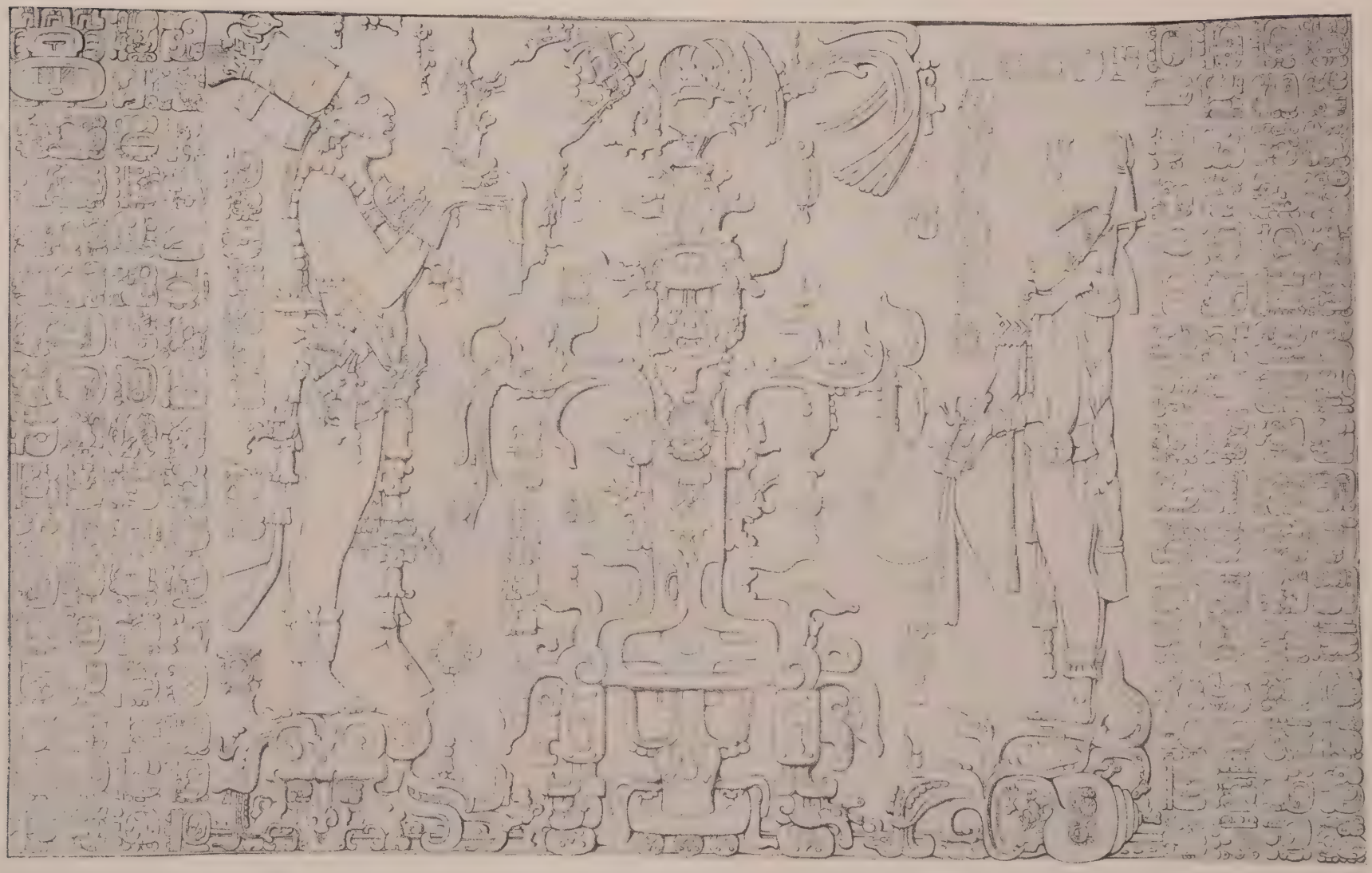
1.

TEMPLE OF THE CROSS.

(The Plan is Similar to that of the Temple of the Sun and of the Foliated Cross.)

PALENQUE.

From Model in the Museum.



Maudslay.

2.

BAS RELIEF ON REAR WALL OF THE TEMPLE OF THE FOLIATED CROSS.

(There was a Bas Relief Very Similar to this in the Temple of the Cross Now in the National Museum in the City of Mexico.)

PALENQUE.

CHICHEN ITZA.

YUCATAN

THE ANCIENT CITY of Chichen Itza, located about 100 miles from Merida, is now easily reached by train and automobile. It is located in a flat, uninteresting country, and during the dry season, water is a matter of prime importance.

Here and there throughout the country are found natural wells. They are erosions in the underlying limestone and are called by the natives "Cenotes". Two of these great wells each some 200 feet in diameter, almost perfectly round, and with a depth of from 100 to 150 feet, were found in the center of Northern Yucatan. When the Maya colonists set out in the early period it was natural for them to locate about these Cenotes, and the name of Chichen Itza is derived from the two Maya words "Chi", mouth, and "Chen", well; Mouth of the Well of the Tribe of Itza. One of these great Cenotes was used as a reservoir and the other as a place of sacrifice. The latter seems to have been dedicated to the God of Rain and great religious ceremonies were held about it, and in time of drought maidens were here sacrificed to appease the vengeance of a wrathful god. So sacred was this well regarded that pilgrimages were made to it from far and near.

Chichen Itza was but a colony until the general evacuation of the Classic Period. According to Brinton, 1882, the wells were discovered 452 A. D. and some authorities state the place was occupied in 531 and abandoned in 669 when the population went to Chakanputun. It was again occupied, according to other chronicles, in 949 A. D. It now began a rapid development and became one of the principal Maya cities. About 1000 A. D. a Federation of States was formed, which included Chichen Itza, Mayapan and Uxmal. This, the first United States of America, lasted for 200 years. At this time Chichen Itza is supposed to have had a population of 200,000 souls. It was the golden period of the Maya Renaissance—the great building epoch—the people prospered under their hereditary rulers and the arts flourished.

But dissension arose between the states in 1149. Chac Zib Chac, the ruler of Chichen Itza, was driven out by Hunac Ceel of Mayapan with the aid of Toltec mercenaries from the Highlands of Mexico. As a reward for their services the Toltecs were given, it is thought, some control of the city, and they introduced new customs, a new religion and new arts.

The architectural development of the Toltecs in their native land was not comparable to that of the Mayas in Yucatan, and yet the motives introduced by them and probably developed by Maya architects produced a broader, and in some respects, a still finer architecture than that which had existed in Chichen Itza. Of the new motives, were the feathered serpent column, which reached its highest development in the Temple of the Tigers; the use of piers to support intermediate walls as in the Castillo and the Temple of the Warriors; the elimination of the Medial Cornice and the introduction of an animal frieze and of a roof cresting as found in the Temple of the Tigers; the use of Atlantean figures to support altars; and the introduction of the Ball Court.

The Nunnery, the Caracol and the Chichanchob were probably erected before the Toltec Invasion.

The Castillo, the Ball Court, the Group of a Thousand Columns, including the Temple of the Warriors and other temples were erected either by the Toltecs or under their influence.

The city must have had a great prosperity under the Toltec reign judging from the splendid monumental buildings which were erected during this time, but later, dissension again arose, severe strifes were frequent, and the country was finally conquered by Francisco Montejo in 1541.

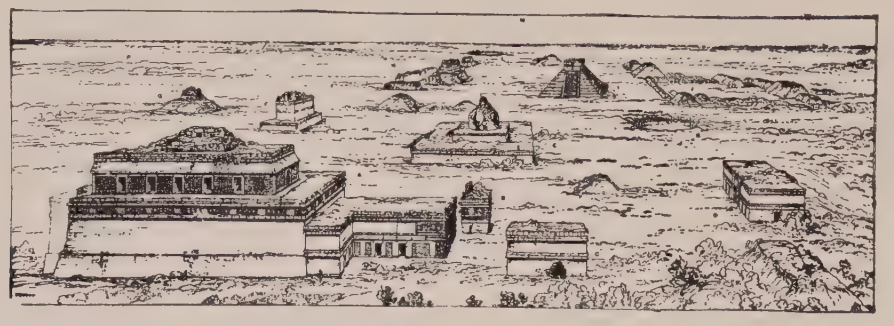
During the Toltec reign many of the Itzas left the country, migrating to Petan and establishing themselves around Lake Petan Itza, probably a former home of the tribe centuries earlier under the Old Empire.

PANORAMIC VIEW

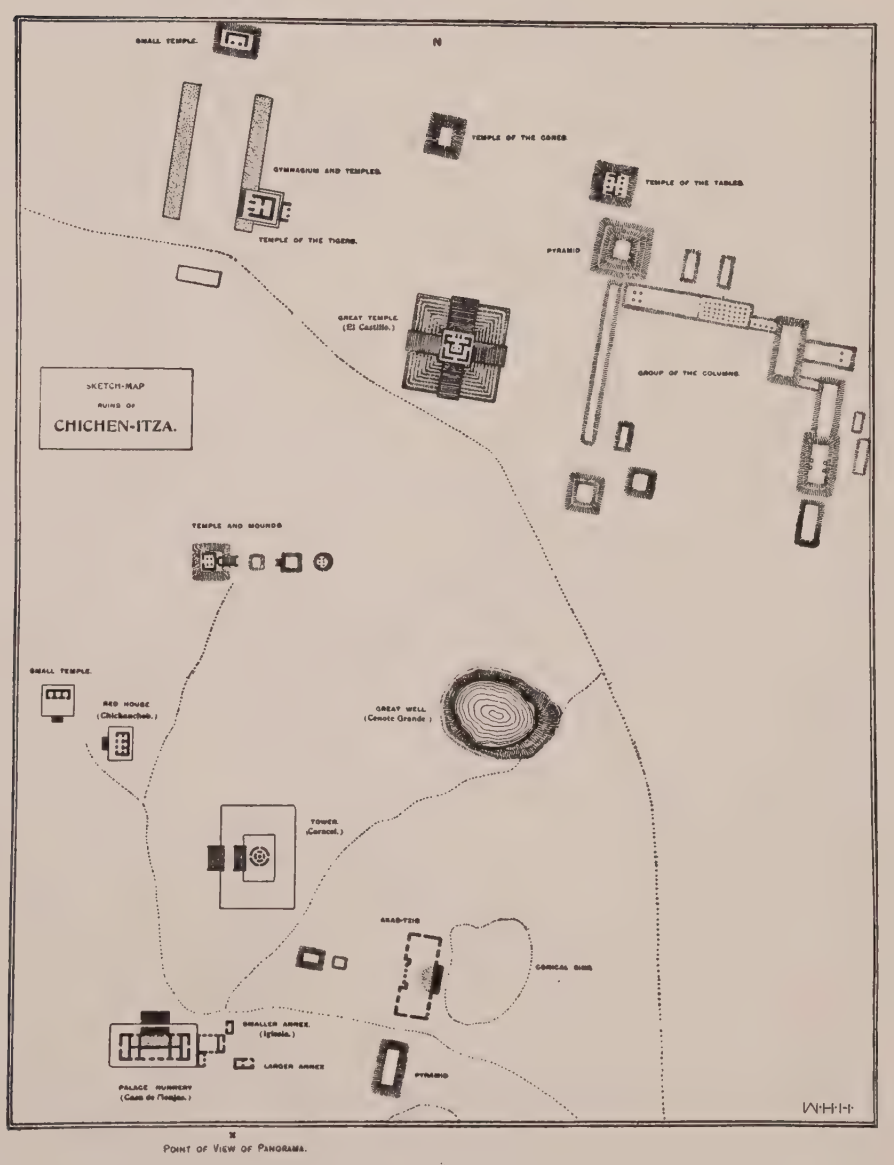
Though most of the larger ruins are now more or less distinctly visible from the lofty crest of El Castillo, the Caracol or the Palace, there is no point from which all can be comprehended in a single view, so that my panorama had to be constructed from an assumed point of view. The point chosen is a little to the South of the Palace, as indicated on the accompanying map, and at a height of about 150 feet. The drawing from this assumed point was easy on account of the excellent view obtained from the top of the Palace; and with this view as a basis a careful study of the individual structures with respect to their obscured southern faces has made it easy to present a consistent and comprehensive panorama, though lack of time has rendered it impossible to execute it in much detail. In the foreground is the group of the Nunnery or Palace, **A**, with its annexed buildings, **B** and **C**, seen from the rear. To the right of this is the low box-like form of the Akab-tzib, **D**, with a deep sink descending from its east front. An oblong pyramid, robbed of its superstructure by modern house builders, is seen in the foreground, and a small mound appears at the left; and beyond and over the east end of the Palace is the Caracol or round tower, **E**. To the left of this come first the squarish mass of Chichanchob or Red House, **F**, and beyond over the top of the Palace is the ruined pyramid-temple, **G**. Near the center of the picture is a small pyramid, from which the temple has almost completely disappeared, and beyond this is the Ball-court or Gymnasium, **H**. El Castillo or the castle, so-called, with its lofty, stepped pyramid, **I**, is a little to the right; still farther on is a small pyramid, and to the right are two considerable temple-pyramids connected with an extensive system of ruins, **J**, of which little is yet known. Two cenotes are indicated, the Cenote Grande at **K**, in the middle of the picture, and the Sacred Cenote at **L**, about a mile from the point of view.—*W. H. Holmes.*

Courtesy of the San Diego Museum.

PANORAMA, FROM A PAINTING BY CARLOS VIERRA.
(LOOKING NORTH.)



PANORAMA.
BY DR. W. H. HOLMES.
(LOOKING NORTH.)

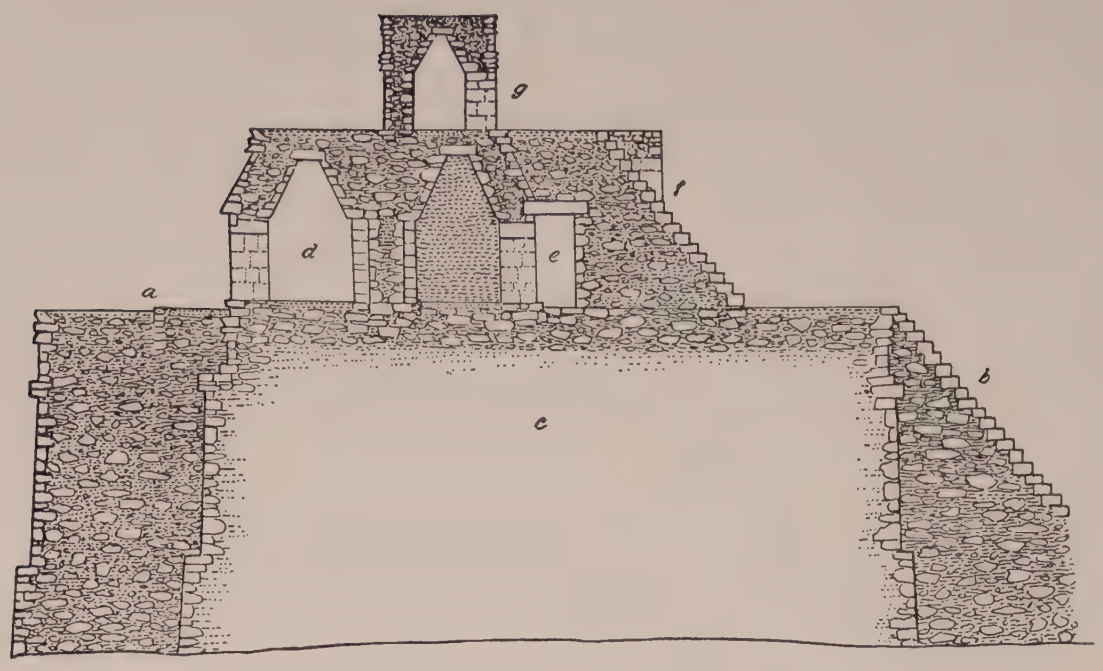


POINT OF VIEW OF PANORAMA.

PLAN.

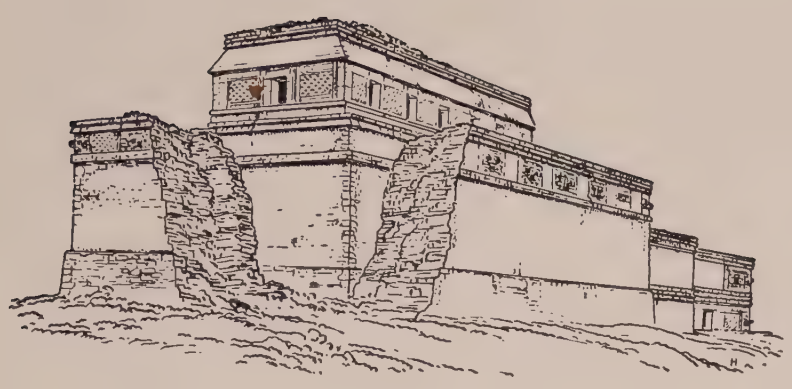
CHICHEN ITZA.

YUCATAN.



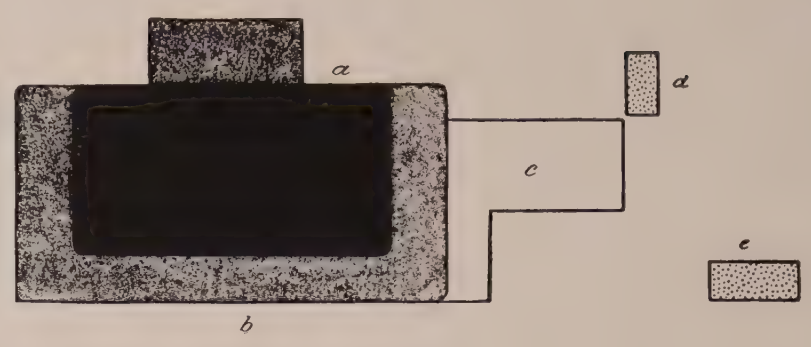
SECTION,

Showing earliest portion, *c*, with superstructures, and additions at the right and left.



SKETCH OF SOUTH-WEST CORNER

Showing breach in encasing masonry and character of inner wall.



PLAN.

Indicating probable stages of growth. The black represents the nucleus, the gray the first addition, the white the second addition. *d* and *e* are annexes.

CASA DE MOJAS OR NUNNERY

CHICHEN ITZA

The largest and most imposing residential structure in Chichen Itza, while called a Nunnery by the early Spanish conquerors, judging from its size and non-religious aspect was probably the palace of the reigning family.

Like many of the Maya buildings it had received several additions.

According to Dr. Holmes the above drawings illustrate the original building which consisted of a stylobate 32 feet high surmounted by a series of living rooms 104 feet long by 30 feet wide. These are reached by a monumental staircase 56 feet wide. Plate XXX.

Later the stylobate was enlarged, thus affording a broad terrace entirely around the rooms, an additional story was added and the grand staircase was extended.

The wall above the cornice of the second story slopes back, similar to the Mansard-like roofs of Palenque—a feature rarely found in Yucatan.

This is the only two-story building now standing in Chichen Itza.

Later a long wing was built eastward. That this was later is shown by the stones of this new part having been cut to miter with the old stones. The finished building has a total length of 228 feet and is 112 feet wide.

The eastern façade of this wing is evidently very late, but I believe was erected before the Toltec regime. Plate XXXI. Quite different from the usual Maya design, the first story is as elaborate in architectural ornament as the second. The snouted mask design forms the chief motive of decoration.

The doorway is particularly elaborate and unusual. The lintel, fortunately of stone, has not given away, so that the façade has suffered little by time. It contains two rows of hieroglyphs, above which are five elephant trunk-like ornaments, the whole surmounted by an elaborate oval panel, in the center of which is a seated figure carved almost in the round. The elaborate feathered head-dress is large and imposing, recalling those of the old empire. Sun-like rays seem to emanate from the figure. The belt course and cornice are particularly rich.

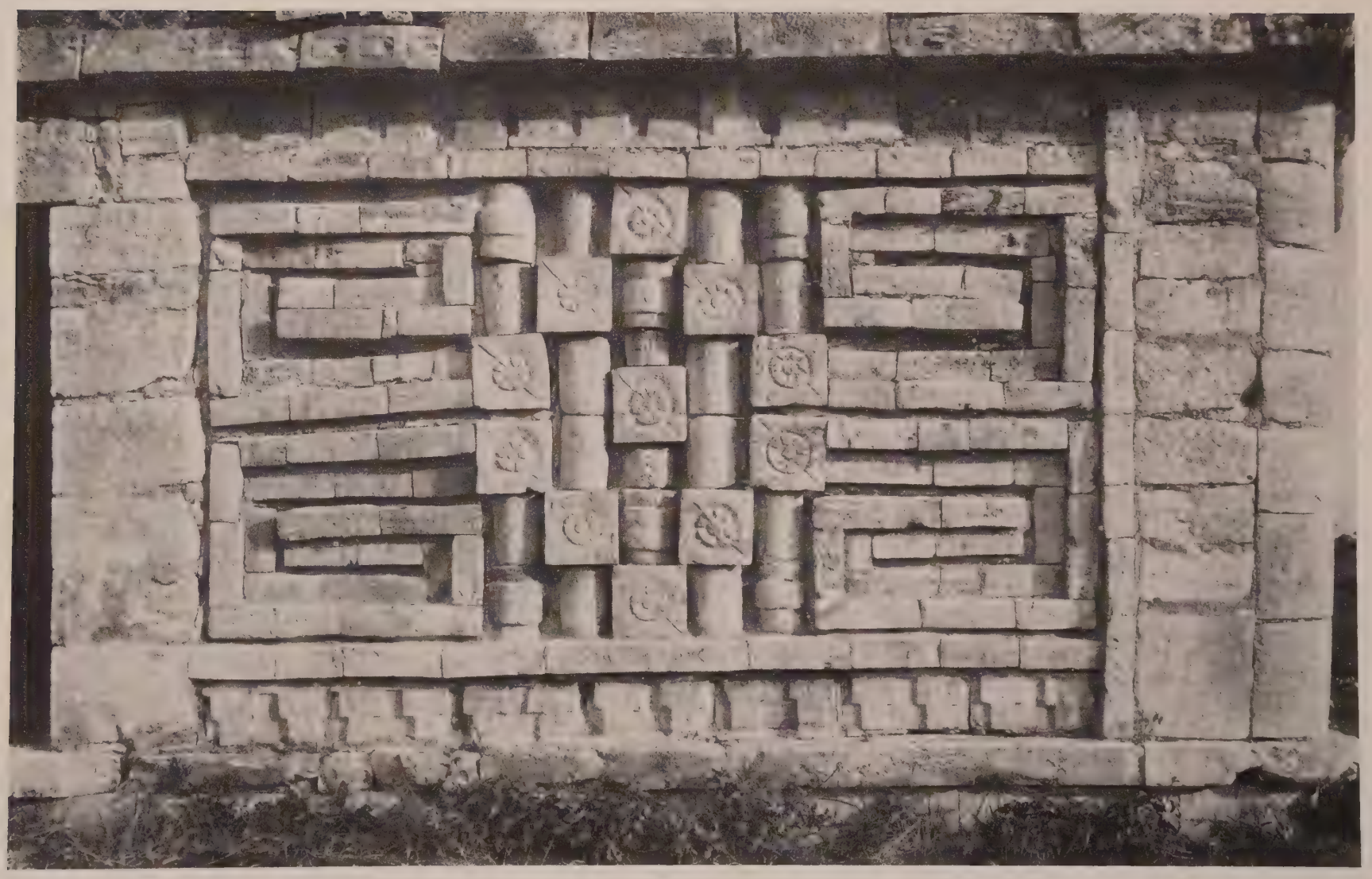
This little façade, original in treatment and bold in execution, is one of the finest pieces of design in the Maya style. Its elaborateness of design and detail is only paralleled by the lower temple of the House of the Magician at Uxmal and the style might be called Maya rococo. There is something about the entire east wing which gives the impression of its having been built of stones of another structure.

Close by is a small building called the annex or Iglesia. This too is excessively rich in detail but lacks the beauty of design of the eastern façade of the Nunnery wing.

Totten. 1.

THE SO-CALLED "CASA DE MONJAS" OR "NUNNERY."

Probably the Palace of the Ruler of Chichen Itza.



2.

DETAIL OF UPPER STORY.
CHICHEN ITZA.
YUCATAN.

Courtesy of the Carnegie Institution 1.

CASA DE MONJAS OR NUNNERY.
SOUTHEASTERN CORNER OF EASTERN WING.

Maler. 2.

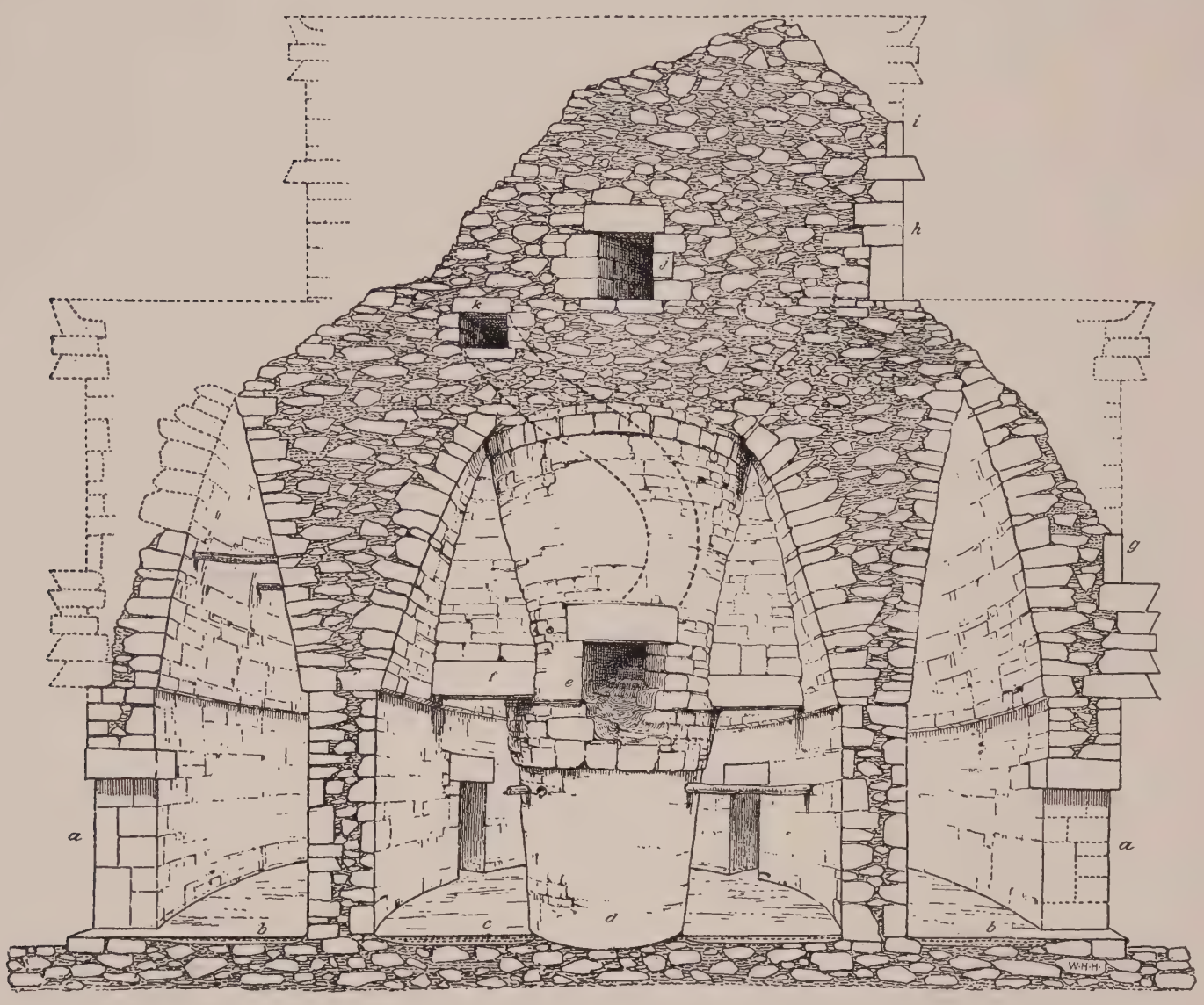
CASA DE MONJAS, OR NUNNERY.
EASTERN FACADE OF EAST WING VERY MUCH LATER THAN MAIN STRUCTURE AND THE SO-CALLED IGLESIA, TO THE RIGHT.
EXAMPLES OF THE MAYA ROCOCO STYLE.
CHICHEN ITZA.

GRAPHIC SECTION OF THE CARACOL OR ROUND TOWER

This building consists of two turrets—a smaller superposed upon a larger. The lower is some 39 feet in diameter and 28 feet in height; the upper—in an advanced state of ruin—approximates 20 feet in diameter and 12 feet in height. Details of the restored profile are theoretic. This building is unique in its two annular galleries, its central column, its winding stairway and its nearly solid second story.

aa. Doorways in outer wall, facing east and west.
bb. Outer annular gallery, 5 feet wide.
c. Inner annular gallery 5 feet wide.
d. Central column of masonry, 7 feet in diameter at base.
e. Entrance to winding stair.
f. Stone, supporting buttress walls (incorrectly connected in the drawing) which are intended to strengthen the arch.
g. Stone in place indicating verticality of the entablature.
h. Masonry at side of entrance to tunnel in upper turret.
i. Stone in place indicating verticality of upper entablature.
j. Section of tunnel passing through upper turret and probably connecting directly or indirectly with the upper opening of the winding stair.
k. Section of stair-passage near upper end.

W. H. Holmes.



GRAPHIC SECTION OF THE CARACOL OR ROUND TOWER, WITH HYPOTHETIC PROFILE.

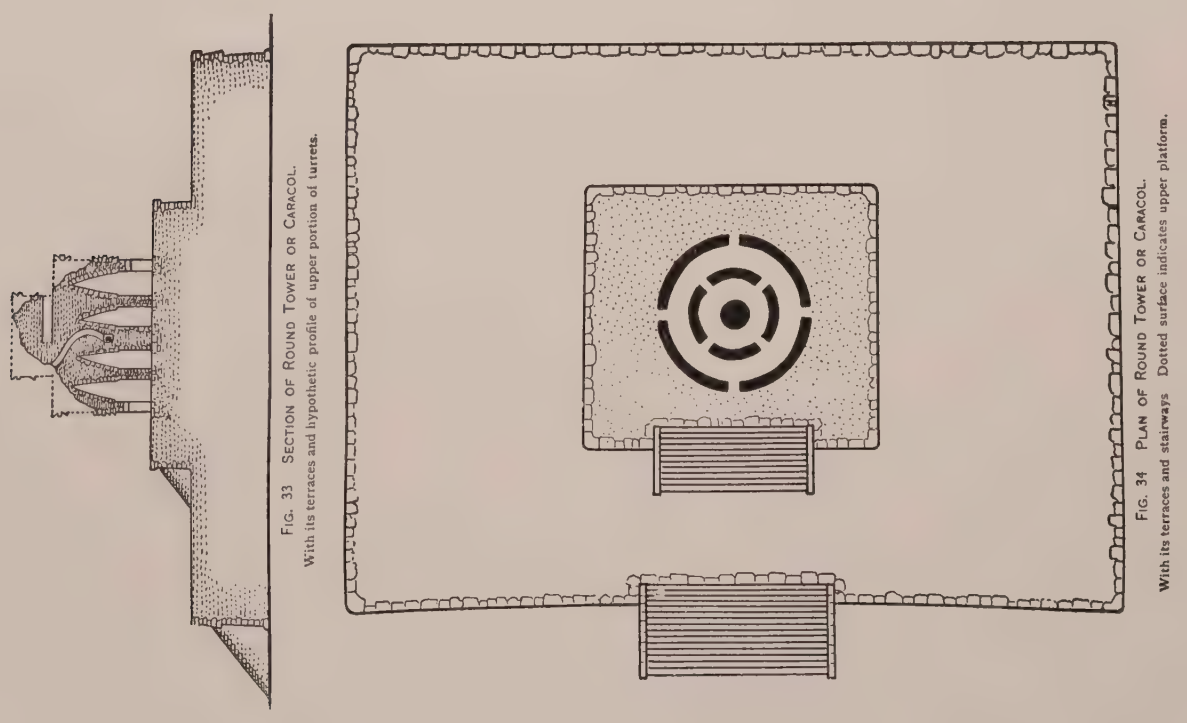


FIG. 33 SECTION OF ROUND TOWER OR CARACOL.
With its terraces and hypothetic profile of upper portion of turrets.

FIG. 34 PLAN OF ROUND TOWER OR CARACOL.
With its terraces and stairways Dotted surface indicates upper platform.

The Caracol or Astronomical Observatory. "Observations made through lines of sight in the upper part of this building on March 22 and June 22 of this year (1925) indicate that one of the purposes of this tower was to mark the positions of the equinoxes and the solstices in the year."—*Morley.*

Totten. 1.

CARACOL AND EL CASTILLO IN DISTANCE

Totten. 2.

CARACOL OR ASTRONOMICAL OBSERVATORY
ONE OF THE FEW CIRCULAR MAYA BUILDINGS.
CHICHEN ITZA.

CHICHANCHOB OR RED HOUSE.

It is oriented so that it faces due west and is regarded as the best preserved Maya building. It stands upon a stylobate about 50 by 60 feet and is 10 or 12 feet high.

The staircase is 20 feet wide, and the superstructure is about 20 by 40 feet and 20 feet high.

It is unique in having a well preserved roof comb and flying façade.

The very plain exterior may have been enriched by decoration in color.

The three doorways have stone lintels and lead to a corridor extending the entire length of the building. From this three doorways lead to as many rooms.

The interior was plastered and painted as usual.

A line of glyphs extends the full length of the vestibule over the back doorways, Stephens illustrates this. A dado in red probably gave the name to the building.

Courtesy of the Pan-American Union. 1.

CHICHANCHOB OR RED HOUSE.
BEST PRESERVED MAYA BUILDING.
CHICHEN ITZA.

Courtesy Architectural Record. 2.

MODEL OF THE
CHICHANCHOB, IN AMERICAN MUSEUM OF
NATURAL HISTORY, NEW YORK, N. Y.

INTERESTING AS SHOWING THE INTERIOR MAYA VAULT,
A ROOF COMB AND A FLYING FAÇADE.

CHICHEN ITZA.

EL CASTILLO

Chichen Itza

DR. W. H. HOLMES' description* is herewith given to accompany his beautiful model shown on Plate XXXV.

"We come now to the noblest monument of Chichen, the so-called Castillo or Castle, K, seen near the middle portion of the panorama rising grandly above the forest-covered plain. It is a pyramid-temple of the first order and bears testimony to the developing taste of the Itzas as well as to their capacity for designing and carrying out constructional enterprises of grand proportions. It is perhaps as nearly a consistent unit of building, according to our estimate, as can be found in the Maya country, though there are still suggestions of lack of maturity and refinement. It embodies only two principal features, the square, terraced pyramid and the block-like superstructure. The pyramid is between seventy-five and eighty feet high and measures some 200 feet square at the base and about sixty feet square at the top. The stepped sides rise at an angle of fifty degrees, the stairways incline a few degrees less and hence project slightly beyond the pyramid at the base. The slopes rise in nine steps of eight or nine feet each. the terrace offsets being somewhat narrower. The rises incline inward a few degrees and are faced with well-hewn stone neatly laid in mortar and deeply paneled or coffered, thus diversifying an effect that would otherwise be extremely monotonous. The stairways, four in number, assist also in breaking up the severity of the pyramidal mass. They are constructed of small blocks of roughly hewn stone, now much displaced in places.

The whole surface was probably evened up with plaster and finished in color. The temple fronts a few degrees east of north and the stairway on that side is, according to Stephens, forty-four feet wide and contains ninety steps.

The balustrades terminate below, as in other cases, in colossal serpents' heads. The serpent idea was carried out probably in the other stairways, and it is assumed, also in the corners of the pyramid. on which may be seen, following in and out the nine terrace steps, the displaced stones that must have formed the colossal bodies. I counted ninety-two steps on the west side, and found the rises to average about eleven inches and the treads about ten inches. It is probable that there was a pretty close agreement in the principal features in all the flights, though the main front may have been favored with more elaborate sculptures.

The temple occupies the summit so completely that the esplanade is only about five feet wide on the west, south and east, and from ten to twelve feet on the north front. The exterior wall measurements vary considerably with the level at which they are taken, as an incline at the base, four feet six inches high, with a batter of seventy-eight degrees, makes a difference of forty inches between the ground level measurement and that of the principal wall surfaces above. The walls are vertical, save the battered course referred to, and the height is twenty-five feet. A ground plan of the temple, with some details of chamber construction and small portions of the pyramid and its stairways, is given on page 110.

The walls average a little less than three feet thick and are pierced by doorways on all four sides. The north entrance is twenty feet wide and is divided into three sections by two massive feathered serpent columns. The other doors are plain and measure four feet six inches in width and six feet and six inches in height. The main entrance leads into a vestibule extending the full length of the building east and west, and behind this a wide doorway gives entrance to a chamber, twelve feet seven inches wide by nineteen feet eight inches in length, in which stand two square columns supporting vault timbers. The other exterior doorways enter a corridor which extends along the south side and continues partially along the east and west sides.

The facade is broken down over more than one-third of its area,

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* Archaelogical Studies among the Ancient Cities of Mexico. Field Columbian Museum.

mainly at the east end. The portal is entire both columns, though much mutilated, being in place, and the three pairs of wooden lintels are intact, save the loss of one, or possibly two timbers from the east span. It is not likely that any novel or important architectural feature is lost, as the entablature decorations, which have entirely disappeared, probably duplicated those of the other facades.

The lower wall zone is plain and is interrupted on the north by the front entrance twenty feet wide and eight feet high, and on the south, east and west by doorways averaging about four feet six inches wide and seven feet six inches high. Fortunately nearly all the wooden lintels of this building are in place, but the fact that they are the weakest point in the construction is shown by the breaking out of considerable breaches above each of the doors where one or more beams have given way.

The upper wall-zone, separated from the lower by the heavy, rigid, triple-membered, medial molding, is treated in a very simple yet effective manner. It is only four feet ten inches wide, and contains three panels on each side, the outer ones being entirely plain and the middle one of each set incloses a simply sculptured grotesque face, approximating the Palace masks, and doubtless referring to the same legendary conception or mythic personage or creature. The upper moldings are as usual, save that the coping member is exceptionally wide.

The inner chamber, usually referred to as the sanctuary, is remarkable for its triple vault † and the symbolic relief sculpturing of its lintels, jambs, pilasters and square columns. These features have been illustrated by Stephens and Charnay, so that they need not be reviewed here in any considerable detail. This is the only perfectly preserved representative of its class in Chichen, but it is probably not as large or as elaborate as others of which we have distinct traces. Its ground plan and construction are well shown in the accompanying figures. Its most striking features are the vaults and the two columns that support the pendant septae of the triple soffit. The columns and the heavy timbers resting upon them are well shown by Stephens, and a reference to my sections will make the relation of these features to the vaults sufficiently clear."

This is the new principal of supporting a wall upon piers referred to under the heading "Maya Vaults", and was doubtless introduced by the Toltecs.

"The walls are of plain masonry, but the jambs and pilasters of the doorway, and the columns, are entirely covered with relief sculptures. The main subject employed is a human figure of full life-size, which is treated in a rather crude way, and occupies the middle portion of each of the narrow upright spaces, of which there are ten in the doorway and eight on the columns. This figure is elaborately costumed, but seems to have a priestly rather than a warlike character, judging by the action and the accompanying paraphernalia. Plate XXXVI. One or two of the figures are remarkable from the fact that they have long beards; others have death's heads."

The later researches by Maudslay give the following data: The pyramid is 196 feet and ten inches on the north and south sides and 202 feet on the east and west.

The staircase on the north side is 44 feet wide and that on the west 37 feet. There are 90 steps.

The platform on which the temple stands is 78½ feet above the ground and is 61 feet north to south and 64 feet from east to west.

The temple is 43 feet by 49 feet.

Three important Toltec motives were used in the erection of the Temple; the feathered serpent columns, the vaulting resting on piers and the roof cresting. It may, therefore, be concluded that the building was erected after the dissolution of the Federation of States and somewhere between 1200 and 1250 A. D.

The pyramid with its beautiful little temple, simple and classic in design, is comparable with the work of the ancient Greeks.

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† Vaulting is about 18 feet high.

HUMAN SACRIFICE AND THE SACRED CENOTE

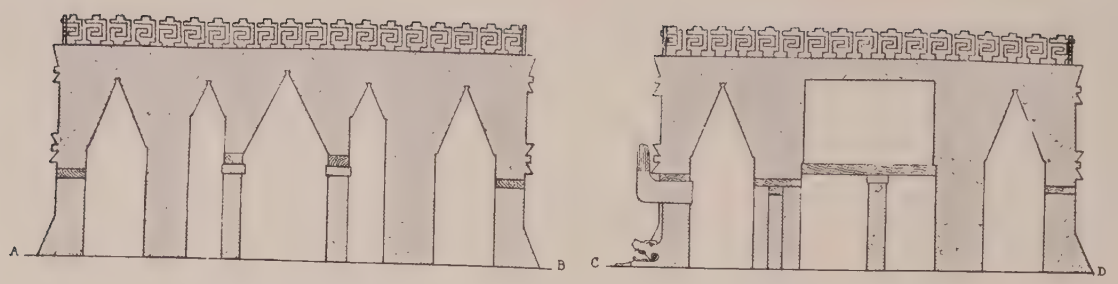
Pyramids with four staircases, as has been observed, were used for sacrificial purposes. The Castillo was no exception, it faces the Sacred Cenote, some quarter of a mile distant. Connecting the two is a raised causeway of cut stone, 20 feet wide. The Cenote, with its dark greenish water, has a most sinister and forbidding aspect. According to the story told by the Indians to the early Spanish settlers, during drought or at other times when it seemed necessary to appease the vengeance of a wrathful god, maidens were cast into the Cenote. At such times the causeway from temple to Cenote was lined on either side by stalwart soldiers, forbidding in their war paint, gorgeous in their costumes of brilliant colored plumage, and with their spears and shields. The cortege of one of these great ceremonials, starting from the little temple surmounting the pyramid, led by certain nobles, followed by the priests in their own elaborate and unique costumes, was followed in turn by the victim to be sacrificed. The cortege wended its way with measured step and slow, to the shrill music of the fife, boom booms of the great drums and the weird notes of the flute, on its awful mission of death. At an altar on the brink of the Cenote it stopped, the victim was brought forward and after certain ceremonies was hurled to the dark waters below. Should by any chance she be able to survive the ordeal for a certain number of hours she was rescued, interrogated as to her trip to the underworld and concerning the pleasure and intentions of the Gods.

Totten. 1.

WESTERN FACE EL CASTILLO OR GREAT PYRAMID,
PROBABLY ERECTED ABOUT 1200 A.D.
CHICHEN ITZA.

2.

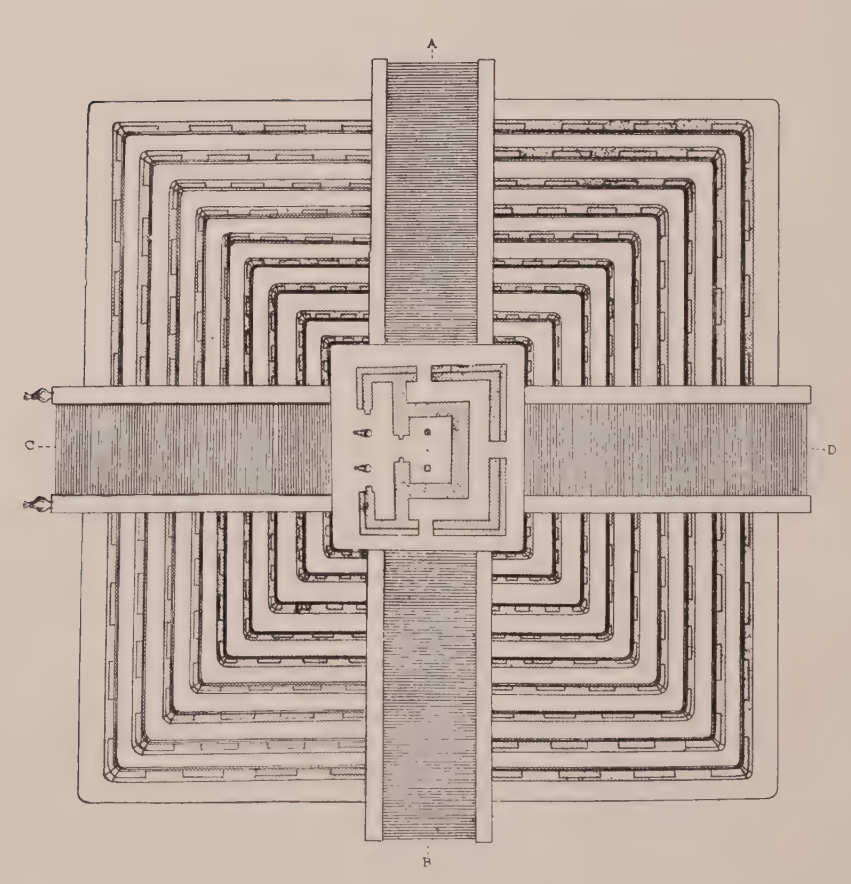
PORTICO OF TEMPLE.
NORTH FRONT OF GREAT PYRAMID.
CHICHEN ITZA.



SECTION THROUGH LINE A-B
Scale 1 inch=10 feet

SECTION THROUGH LINE C-D
Scale 1 inch=10 feet

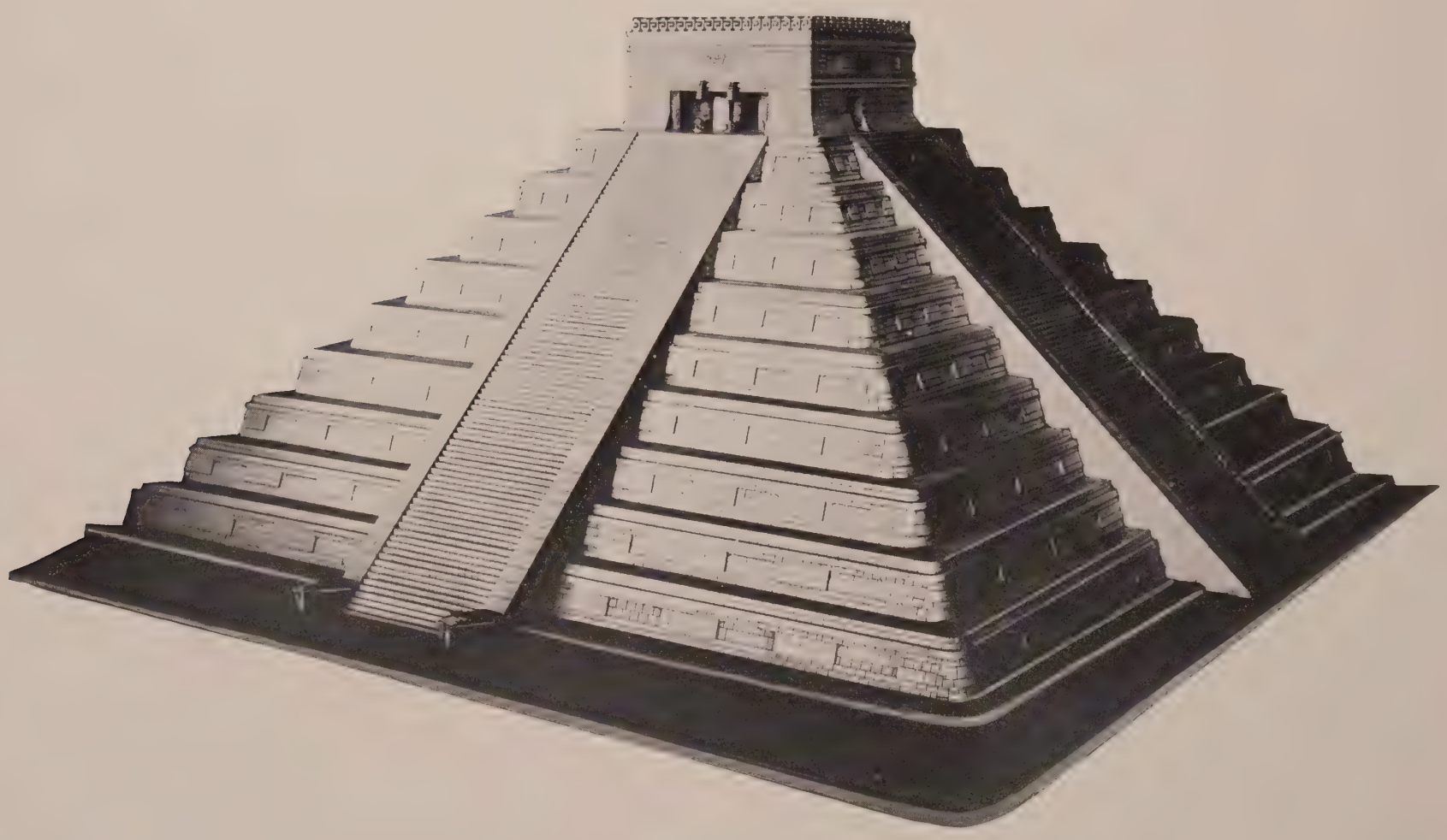
SECTION.



PLAN.

GREAT PYRAMID CALLED EL CASTILLO.

CHICHEN ITZA.



EL CASTILLO.
CHICHEN ITZA
MODEL MADE UNDER THE DIRECTION OF DR. W. H. HOLMES
BY DELANCY GILL. U. S. NATIONAL MUSEUM, WASHINGTON, D. C.

1.

EL CASTILLO

Serpent's Head at Foot of Balustrade on Front or North Side.

Chichen Itza

Totten 2.

DOOR JAMB

El Castillo

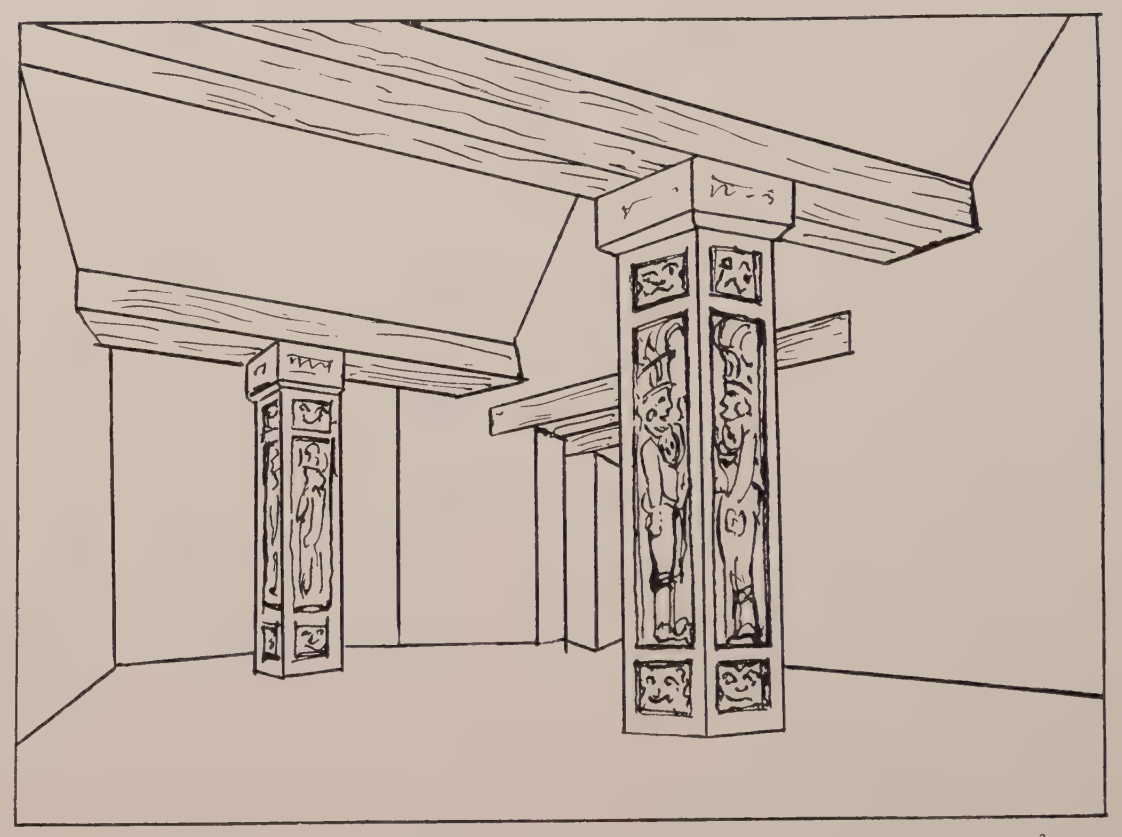
Chichen Itza

Totten 4.

SACRED CENOTE

Chichen Itza

This natural well, 200 feet in diameter, with almost perpendicular sides, has a sinister and forbidding aspect. It is 70 feet to the dark greenish water which is 70 feet in depth.



3.

INTERIOR OF TEMPLE SURMOUNTING EL CASTILLO.

Chichen Itza.

Square piers supporting sapote beams take the place of the usual cross walls. A new and very late motive in Maya design.

Restoration (full size), by Dr. W. H. Holmes, National Museum, Washington, D. C.

FEATHERED SERPENT COLUMNS
FROM EL CASTILLO
CHICHEN ITZA.

Maler. 1

SERPENT HEADS
AT FOOT OF BALUSTRADES.
HIGH PRIESTS TEMPLE.
CHICHEN ITZA.

Totten 3.

DECORATED PIER,
TEMPLE OF THE TABLES.
CHICHEN ITZA.

2.

SQUARE SERPENT COLUMNS.
HIGH PRIESTS TEMPLE.
11-19-11-0-0 or DEC. 31, 1339. (SPINDEN.)
CHICHEN ITZA.

There are several small pyramids, known variously as the Temple of the Tables, the High Priest's Temple, etc. Some of these are thought to contain tombs.

There is a vertical shaft about 30 inches square extending downward from the temple platform of the pyramid of the Temple of the High Priest. At a depth of 50 feet there is a large chamber—temple or tomb. Mr. Thompson descended this and found an altar on one side of the chamber, upon which was a jadite case containing several large pearls.

1.

DETAILS, MAUSOLEUM, CHICHEN ITZA.

2.

JAGUAR.

Totten

3.

DETAILS FROM THE SO-CALLED MAUSOLEUM.
CHICHEN ITZA.

SQUARE COLUMNS, TEMPLE OF THE TABLES.

Four of these handsomely sculptured, square columns are ranged across the eastern platform of the pyramid, and, judging by analogy, were employed to support the vault timbers of the sanctuary. They are nearly identical in their sculptures with square columns in the sanctuary of El Castillo, and correspond closely with the square, sanctuary columns of several other temples. At the top are bearded, atlantean figures in the position of supporting the entablature or beams; at the base are similar sculptures, not clearly made out; and occupying the middle spaces, one to each side, are life sized, elaborately costumed figures of men in low relief. The height is 9 feet and the horizontal measurement about 25 inches. With the columns are shown several of the pigmy atlantean figures used as supports for stone tables ranged around the margin of the terrace, as if originally placed against the back wall of the sanctuary. They are now much displaced, and in the view one is so placed as to show the graceful drapery of the back.

—W. H. Holmes.

Maler 1.

ALTARS IN THE LATE PERIOD TOOK THE FORM OF TABLES AND
WERE SUPPORTED BY ATLANTEAN FIGURES.

CHICHEN ITZA.

Maler 2.

TEMPLE OF THE TABLES.

CHICHEN ITZA.

BALL COURT

Chichen Itza

AS WE have seen, there are only two general classes of buildings in Maya art—the temple and the so-called palace. The Nahaus, with their occupation of Chichen Itza, introduced a third—the Ball Court. This is remarkable and is a unique type of building, and although the idea seems to have come from the Valley of Mexico, there is no example extant of a Court there of so architectural and monumental a character as the one at Chichen Itza.

The plan of this is really academic. The court, as shown, Plate XLII, consists of two parallel walls, each 272 feet in length, 27 feet in height, and placed 119 feet apart. In the center of each wall is a stone ring, through which the player tried to pass the ball. These rings are placed three feet from the top. They are single pieces of stone, four feet in diameter, eleven inches thick and ornamented with designs of intertwining serpents. The hole is 1′-6″ in diameter.

There is a platform in front of each wall which extends beyond each end. It is five feet high and ten feet broad. The face of this is battered and near each end is a series of conventional figures carved in relief. The rear of the great walls were probably stepped from one end to the other and from top to bottom. They thus formed a staircase their entire length. There is a small heap of stone at the center and at either end of the walls. These, Maudslay thinks, were markers' or umpires' posts. Their exact form can only be conjectured until the stones are sorted out and rebuilt.

Surmounting one of the great walls is a small structure in the form of a temple, known as the Temple of the Tigers, from the sculptured frieze of tigers or jaguars extending entirely around it.

The design of this little building marks an epoch in Maya architecture. This is one of the finest designs in the style. The detail, too, is carried out with great feeling and delicacy. The criticism which might be brought against the design of most of the façades is that the effect on the exterior is usually that of a two-story building, while the interior is but one. This effect is largely due to the heavy string course or medial cornice which was usually placed about half way up the façade, thus making too abrupt a horizontal line between the plain lower and the richly ornamented upper portion of most of the buildings. In the Temple of the Tigers it will be noticed that this medial cornice has been omitted, thus giving a gradual gradation from the severe lower to the excessively rich upper portion of the building. The decorative motifs are the remarkable serpent columns which represent perhaps the finest conventional ornament used by the Mayas; the intertwining serpent, giving the effect of a single guilloche; the use of shields and balustrades, and the remarkable jaguars.

The lintels over the columns and the doorway between the portico and inner chamber were both in sapote wood, richly carved. Plate XLVIII.

Another unique feature of this splendid design is the roof cresting. I found a number of these on the ground at the foot of the Temple and made full-sized rubbings of them, as well as of all of the ornaments shown, and the plates are made from these full-sized details. Of the number of crestings on the roof I am uncertain, as it was impossible to tell how many were actually used. The drawings from which the model of the entire court was constructed were also made on the site.

Traces of color are still to be found on the Temple of the

Tigers, and my colored drawings are thought to be correct by Mr. E. H. Thompson, who has perhaps given the matter as much study as any archaeologist.

In the inner chamber of the Temple are mural paintings. These have been splendidly illustrated by Maudslay.* Although partly destroyed, the subjects can be made out. A portion represents a human sacrifice. On one side is a battle scene, with warriors attacking a town. On the roofs of some of the houses are shown women apparently cheering the defenders. The weapons are short spears hurled from throwing sticks or atlatl, and all of the warriors carry shields. Maudslay has pointed out that although bows and arrows were mentioned by the Spanish writers, the bow never figured on any Maya sculpture and was probably of late introduction.

Directly back of the Temple of the Tigers, but on the ground level, are the remains of another temple, the rear wall of which is elaborately carved. It represents some sort of ceremonial or procession in several courses, one above another. This was all in rich colors and when first unearthed the colors were very bright. A careful study of the original colors was made by Miss Breton and her original drawings are now in the Peabody Museum at Cambridge, and there is a plaster cast of this wall in the University Museum, Philadelphia, which was colored after her drawings.** The procession, Plate L, represents gods, priests, and warriors in elaborate and interesting costumes. The piers of the temple are elaborately carved and between them is a unique tiger seat or altar.

At the North end of the court is a small temple *in antis*. This has circular columns, richly carved with figures of warriors, and the rear of this temple is one elaborate mass of carving. Plate LIII. At the South end of the court is another temple or colonnaded pavilion. Plate LIV. This has square columns decorated.

There are low walls at either end of the court as shown in the plan, thus enclosing it completely.

The great walls were grand stands, the little temple at one end was used for religious ceremonies preceding the games, the pavilion at the other end may have served as a grand stand for the nobles—all in cut stone, enriched by color.

The architectural arrangement and effect of this Court is most interesting and unique.

Whether the so-called Temple of the Tigers, which is one of the gems of the Maya architecture, was really intended for religious ceremonies, or as the Royal Box for the reigning monarch is unknown; certain it is that the planning of the Court is the work of an architect of no mean ability. The placing of these walls, the little Temple and the Pavilion, is most admirably done and it is a work that calls for the instant admiration of the observer.

The Mexican Government has just cleared the debris so that the building can be better studied at the present time than ever before. It is hoped that the Government will restore the court, which can be very readily done, as practically all the material is on the site.

An account of the diversions of Montezuma, by Herrera, is herewith given, and it is supposed that the same game was played at Chichen Itza. It resembles somewhat our game of basketball.

"The King took much delight in seeing Sport at Ball, which the Spanish have since prohibited, because of the mischief that often happened at it; and was by them called 'Tlachtli,' being like our tennis. The Ball was made of the Gum of a Tree that grows

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* Biologia Centrali Americana.

** Other examples of this cast are in the Natural History Museum, New York, and the National Museum, Washington, D. C.

in hot Countries, which, having Holes made in it, distils great white drops, that soon harden, and, being worked and moulded together, turn as black as pitch. (Undoubtedly cacutchouc, or India-rubber.)* The balls made thereof, tho' hard and heavy to the hand, did bound and fly as well as our Foot-balls, there being no need to blow them; nor did they use Chases, but vied to drive the adverse Party that is to hit the Wall, the others were to make good, or strike it over. They struck it with any part of their Body, as it happened, or they could most conveniently, and sometimes he lost, that touched it with any other part but his Hip, which was looked upon among them as the greatest Dexterity; and to this effect, that the Ball might rebound the better, they fastened a piece of stiff leather on their Hips. They might strike it every time it rebounded, which it would do several Times one after another, in so much that it look'd as if it had been alive. They play'd in Parties, so many on a Side, for a load of Mantles, or what the Gamesters would afford at so many Scores. They also play'd for Gold, and Featherwork, and sometimes play'd themselves away, as has been said before. The Place where they play'd was a ground Room, long, narrow, and high, but wider above than below, and higher on the Sides than at the Ends, and they kept it very well plaster'd and smooth, both the Walls and the Floor. *On the side Walls, they fix'd certain Stones, like those of a Mill, with a Hole quite through the Middle,* just as big as the Ball, and he that could strike it through there won the Game; and in Token of its being an extraordinary Success, which rarely happened, he had a Right to the Cloaks of all the Lookers-on, by ancient Custom, and Law amongst Gamesters; and it was very pleasant to see; that as soon as ever the Ball was in the Hole, the Standers took to their Heels, running away with all their Might to save their Cloaks, laughing and rejoicing, others scouring after them to secure their Cloaks for the Winner, who was obliged to offer some Sacrifice to the Idol of the Tennis-court, and the Stone through whose Hole the Ball had pass'd. Every Tennis-court was a Temple, having two Idols, the one of Gaming, and the other of the Ball. On a Lucky Day at Midnight, they performed certain Ceremonies and Enchantments on the two lower Walls and on the Midst of the Floor, singing certain Songs, or Ballads; after which a Priest of the great Temple went with some of their Religious Men to bless it; he uttered some Words, threw the Ball about the Tennis-court four Times, and then it was consecrated, and might be play'd in, but not before. The Owner of the Tennis-court, who was always a Lord, never play's without asking some Offering and Performing certain Ceremonies to the Idol of Gaming, which shows how superstitious they were, since they had such Regard to their Idols, even in their Diversions. Montezuma carry'd the Spaniards to this Sport, and was well pleas'd to see them play at it, as also at cards and dice."

"With some slight variation in details, the general features are so identical as to leave no doubt in my mind that this structure was erected for precisely the same object as the Tennis-court in the city of Mexico described by Herrera. The temples are at hand in which sacrifices were offered, and we discover in this something more important than the mere determining of the character of a building; for in the similarity of diversions we see a resemblance in manners and institutions, and trace an affinity between the people who erected the ruined cities of Yucatan and those who inhabited Mexico at the time of the conquest. In the account of Herrera, moreover, we see incidentally the drawing of a funeral pall over the institutions of the natives, for we learn that the sport which 'Montezuma took such delight in seeing' and which, beyond doubt was a favorite diversion of the people, 'the Spaniards have since prohibited.' "

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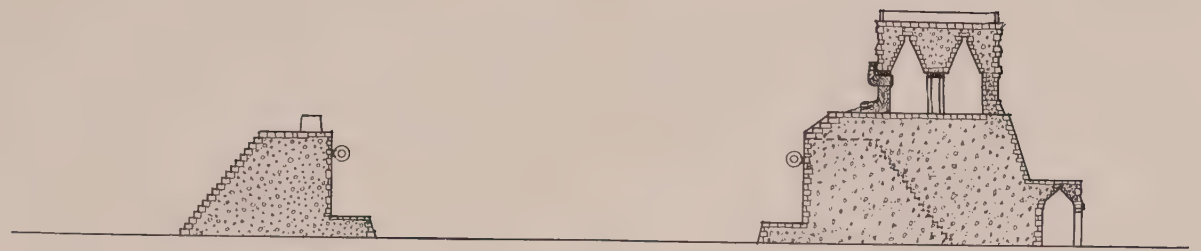
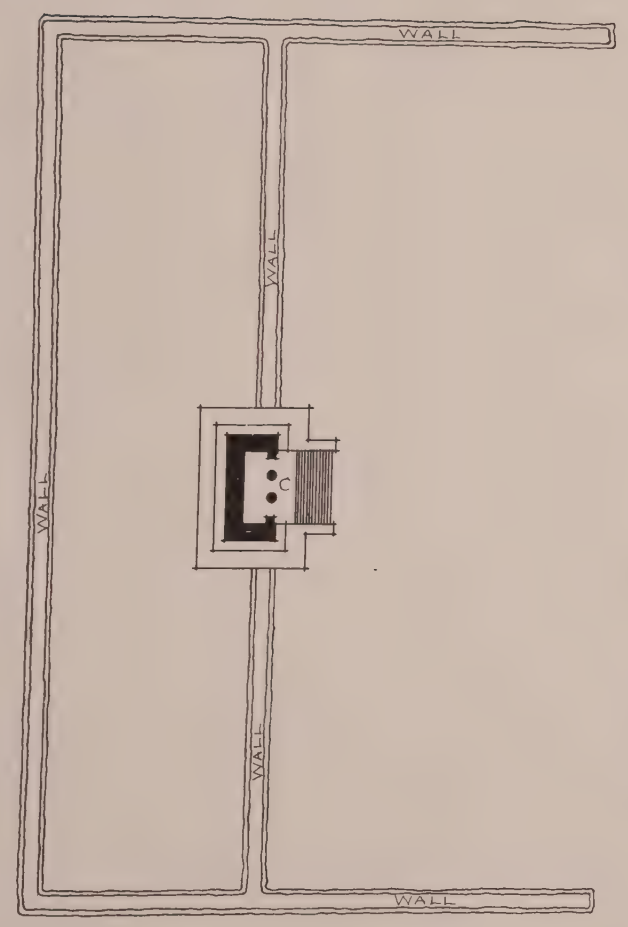
* Morley points out that this is the first mention in history of India rubber.

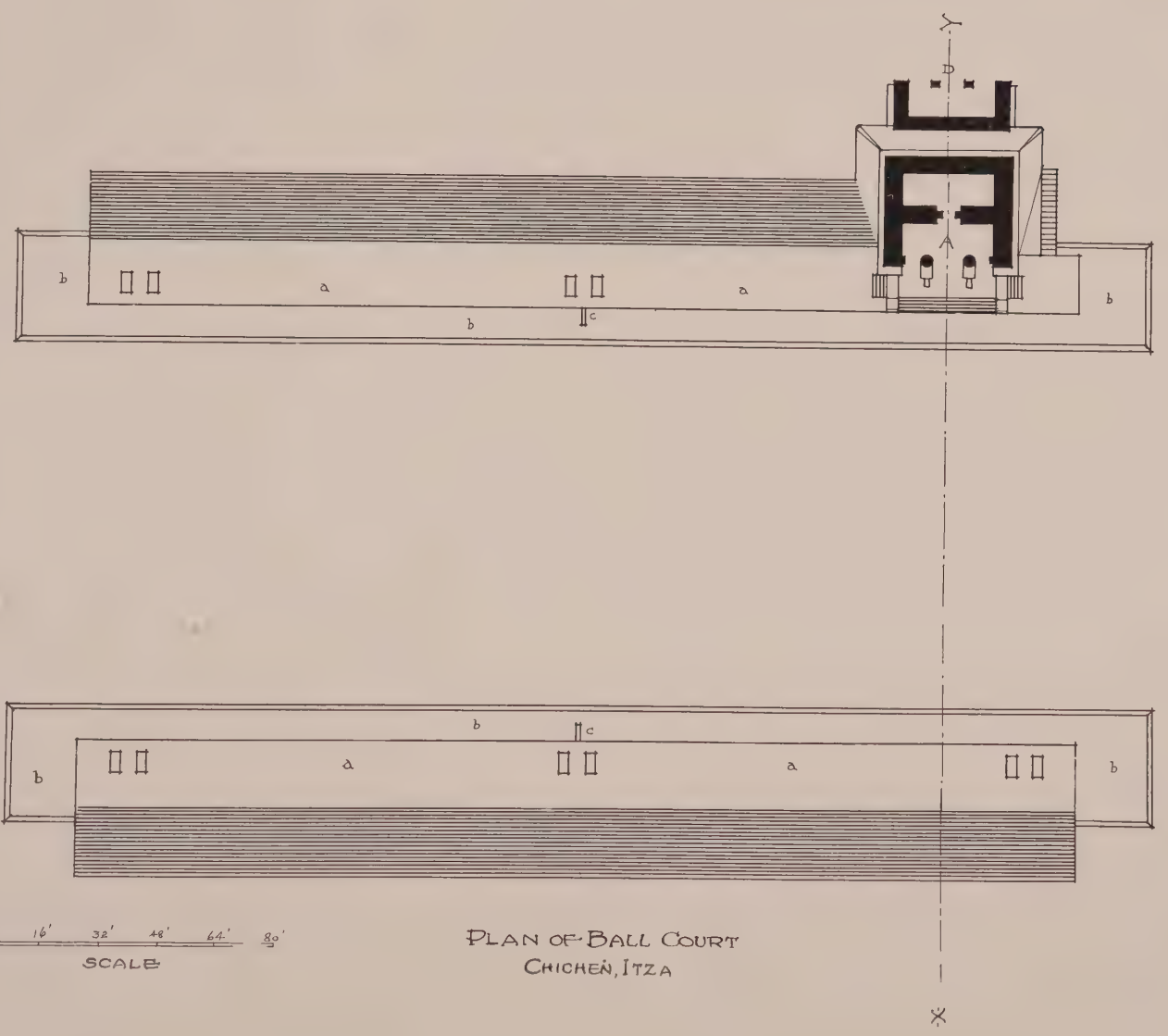
Totten.

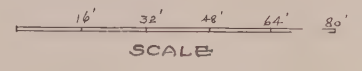
BALL COURT, LOOKING NORTH.
Photographed in 1919.
CHICHEN ITZA.



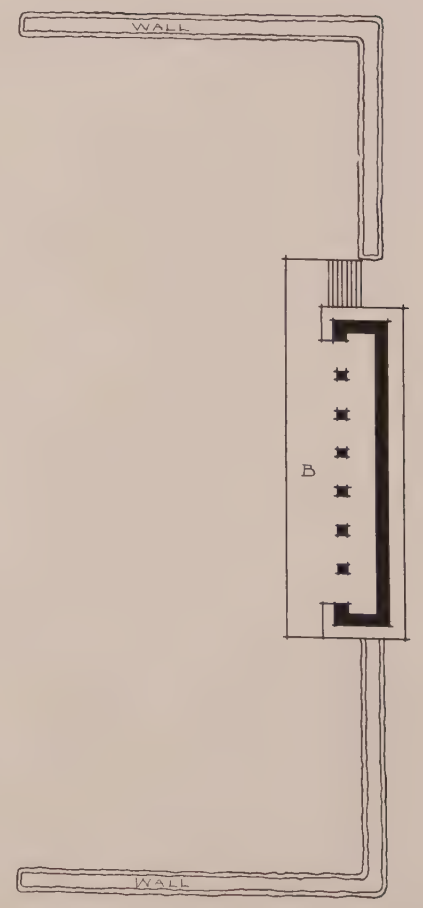
SECTION THROUGH XY







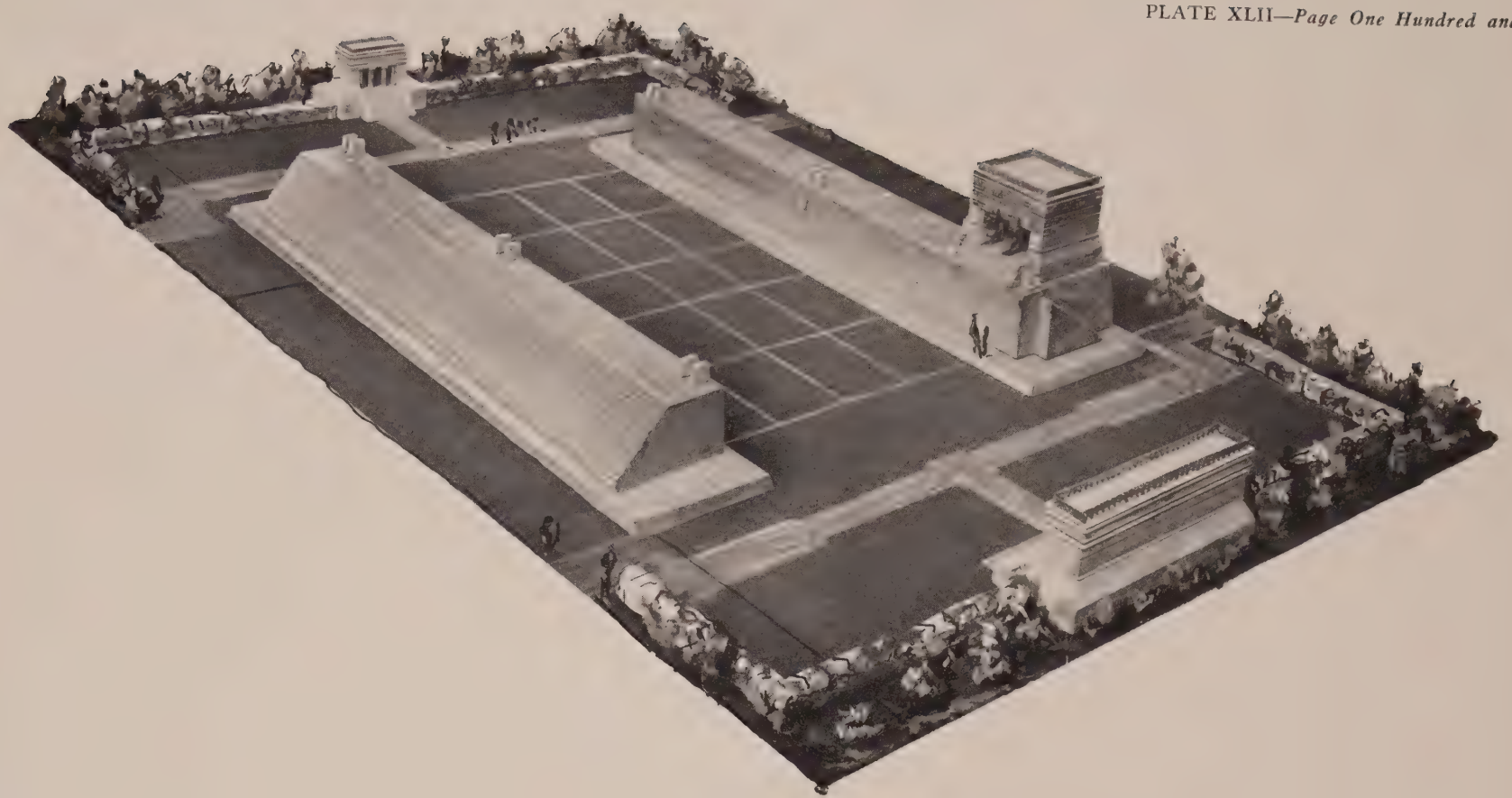
PLAN OF BALL COURT
CHICHEN, ITZA



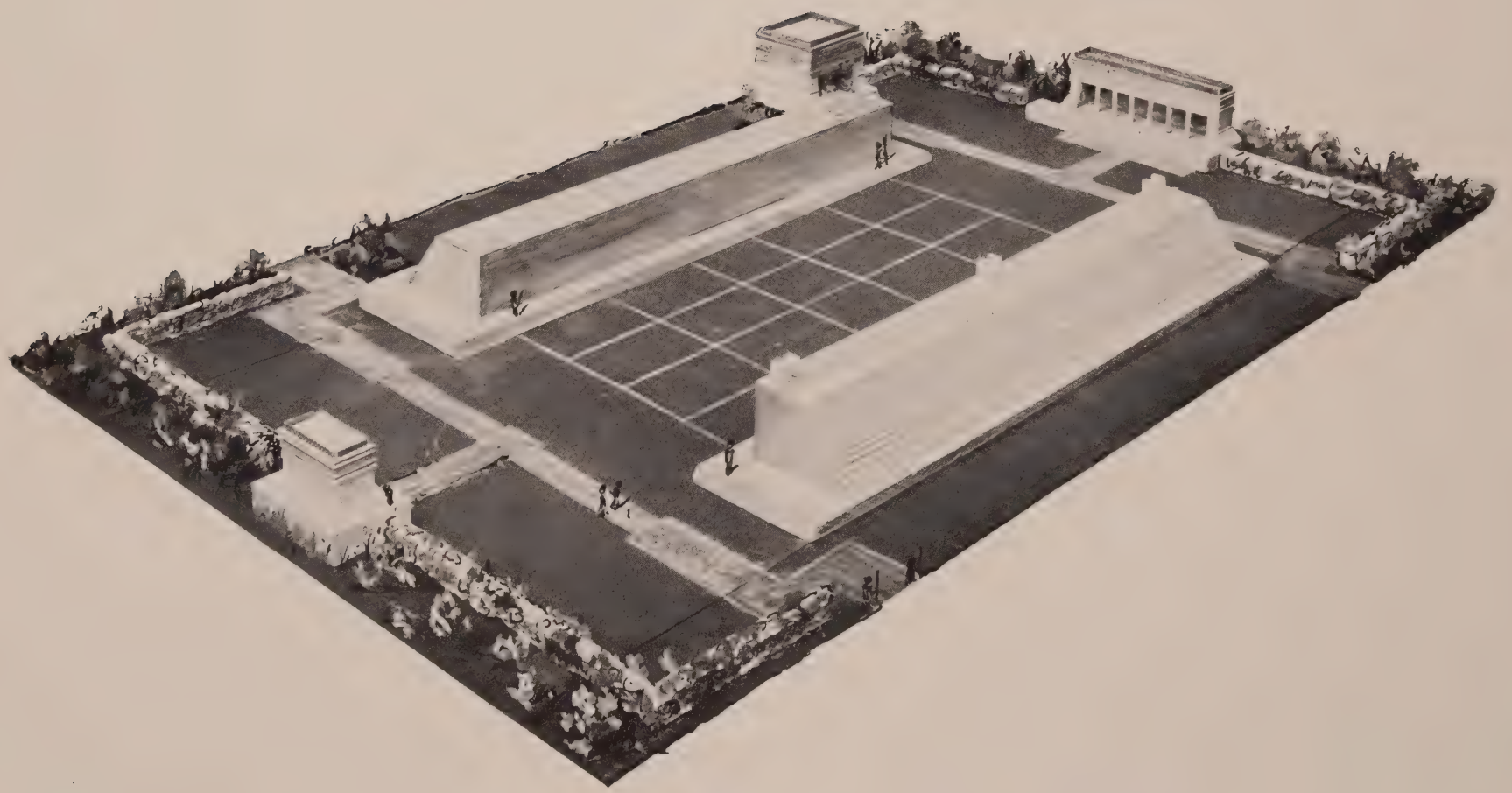
Measured and drawn by George Oakley Totten.

a. Grand stands.
b. Platform.
c. Ring on either side of Court.

A. Temple of the Tigers—Possibly Royal Box.
B. South Temple or Pavilion—Probably Stand for the Nobles.
C. North Temple,—Said to have been for religious ceremonies preceding each game.
D. Temple with rear wall richly decorated. See plate L.



LOOKING NORTHEAST.



LOOKING SOUTHEAST.

MODEL OF BALL COURT—⅛″ SCALE

BY

GEORGE OAKLEY TOTTEN

CHICHEN ITZA

YUCATAN

The model of the Ball Court, to a scale of ⅛″ to the foot was made from actual measurements of the building. There is no data for the marking off of the floor of the Court into squares nor for the paths shown. The small blocks on the walls, probably umpire stands, are also hypothetical. There are, however, heaps of stones at these places on the wall, but their exact nature can only be determined by further study.

As may be seen from the photographs, the rear and sides of these buildings are sufficiently intact for obtaining measurements. The lower portions of the columns and piers of the small temple and the pavilion are in place and the upper portions lie close by on the ground so that it was possible to measure these accurately.

The frieze of the small temple and of the pavilion may have been decorated in relief or color; more exhaustive study may determine this.

Model by George Oakley Totten.

TEMPLE OF THE TIGERS.

BALL COURT.

CHICHEN ITZA.

The front elevation is shown in color Plate facing page 6.

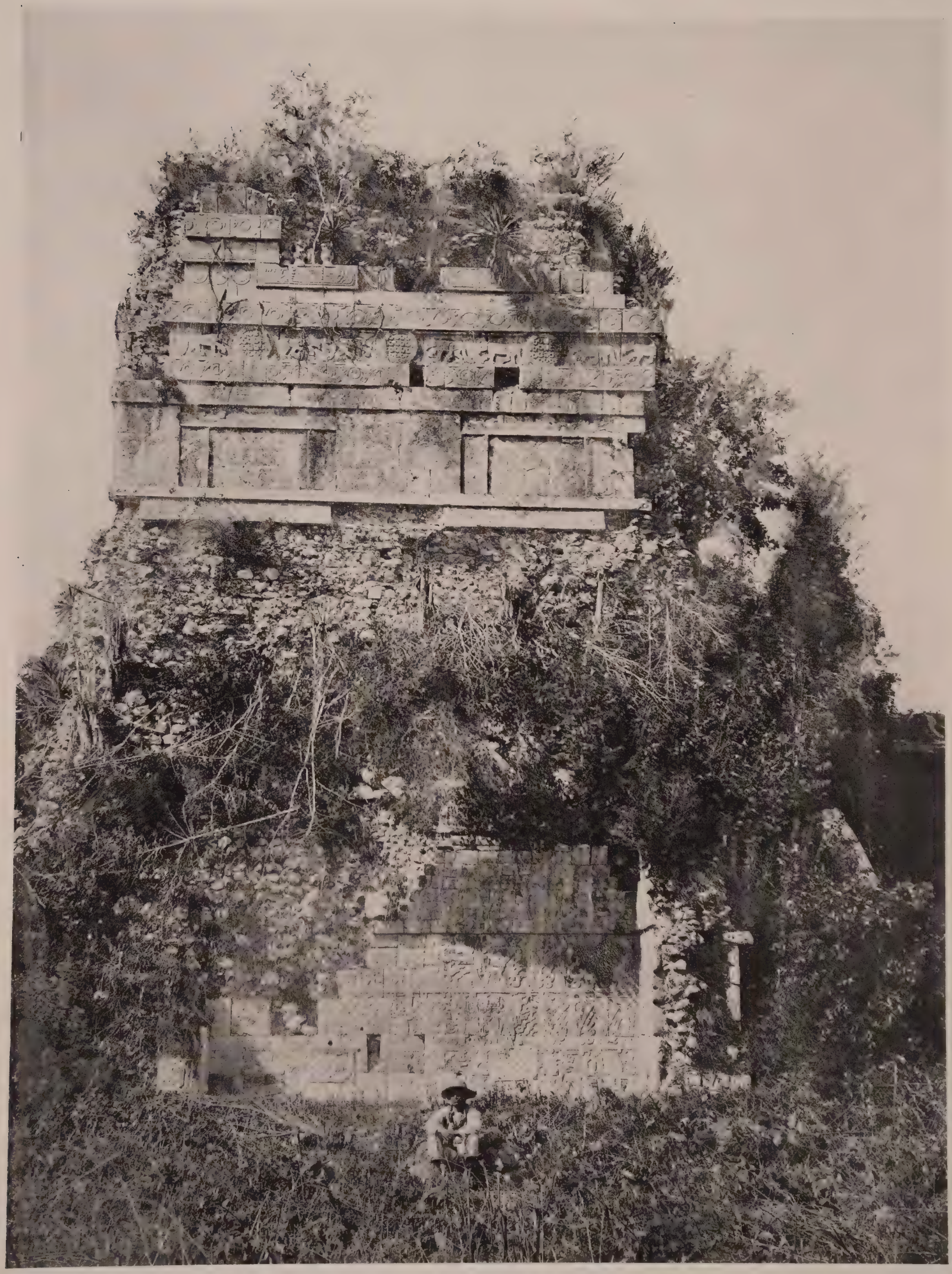
Drawn by George Oakley Totten.

PORTICO.

TEMPLE OF THE TIGERS.

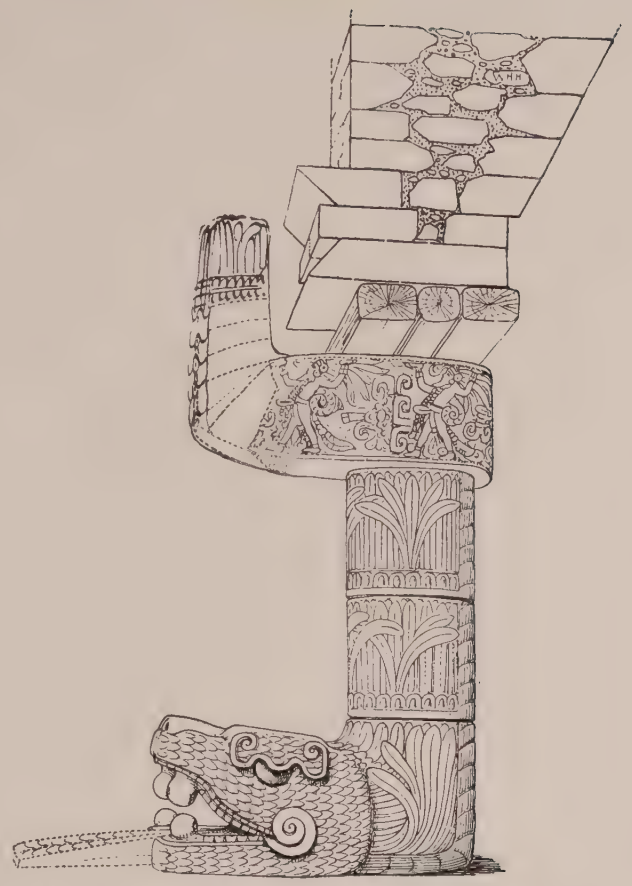
BALL COURT.

CHICHEN ITZA.



Maler.

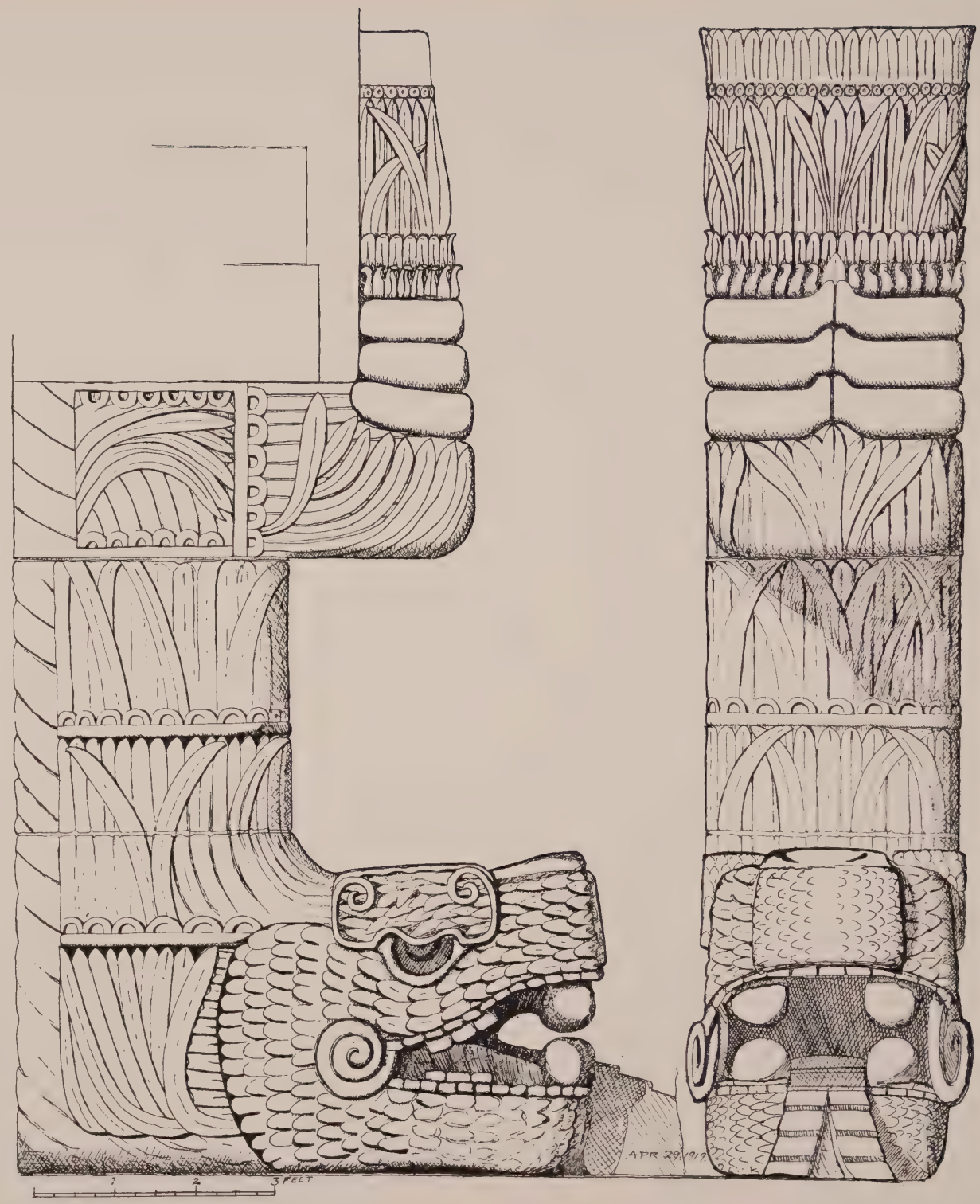
EASTERN FACADE OF THE TEMPLE OF THE TIGERS
HIGHLY DECORATED REAR WALL OF TEMPLE AT ITS BASE.
BALL COURT.
CHICHEN ITZA.



RESTORATION FEATHERED SERPENT
El Castillo.
BY DR. W. H. HOLMES.

Totten. 2.

FEATHERED SERPENT COLUMN.
PORTICO TEMPLE OF THE TIGERS.
Ball Court, Chichen Itza



Measured and Drawn by George Oakley Totten. 3.

FEATHERED SERPENT COLUMN.
TEMPLE OF THE TIGERS.
BALL COURT.
CHICHEN ITZA.
(This Might Be Called the Sixth Order of Architecture.)

From full size detail.
Drawn by George Oakley Totten.

ROOF CRESTING.
TEMPLE OF THE TIGERS.
BALL COURT.
CHICHEN ITZA.

Courtesy of the University Museum, Philadelphia. 1.

JAMBS AND LINTEL OF INNER DOORWAY.
TEMPLE OF THE TIGERS.

Courtesy Pan-American Union. *Maudslay.* 2.

DOOR JAMBS.
INNER DOORWAY.
TEMPLE OF THE TIGERS.
CHICHEN ITZA.

From full size detail.
Colored by Vicken von Post Totten.

DETAIL OF INTERTWINING SERPENT ORNAMENT
TEMPLE OF THE TIGERS
BALL COURT
CHICHEN ITZA

Totten. 1.

REAR OF TEMPLE OF THE TIGERS.
TEMPLE AT BASE HAS REAR WALL DECORATED.

Courtesy of the University Museum, Philadelphia. 2.

DETAIL OF REAR WALL, IN RELIEF AND COLORED.
TEMPLE AT BASE OF TEMPLE OF THE TIGERS.
CHICHEN ITZA.

Courtesy of the American Museum of Natural History, New York. 3.

REAR WALL DECORATION, IN RELIEF, COLORED.
A FRIEZE OF GODS, PRIESTS AND WARRIORS.
TEMPLE AT BASE OF TEMPLE OF THE TIGERS.
CHICHEN ITZA.

*"This shows a picture of a human sacrifice which was painted on the space between the top of the doorway and the spring of the roof. Unfortunately the heads of the figures have all disappeared, as they were painted on the sloping surface of the roof itself, whence all the plaster has fallen away. The body of the victim is stretched backward, over a large stone, an attendant kneels to grasp its ankles, while what I venture to call the serpent-priest stands over the body, and is probably about to cut out the heart. The green and yellow band in front of the priest is undoubtedly part of the snake, which appears always to accompany the figure of the serpent-priest. Another attendant holds a sort of banner in his hand, and behind him stands a man whose body bears tattoo-marks, and who appears to be also a victim for sacrifice and is being pushed forward by an attendant wearing a short white garment and sandals. Three other figures are shown in the Plate, which are possibly those of two other victims and a third attendant." —*Maudslay.*

*"This gives what remains of the picture of a battle which covered a considerable portion of the wall to the south of the doorway. The attacking party is led by the priest or warrior under the protection of the plumed serpent. The town or village which is being defended is composed of houses with thatch-roofs. The roof of each house usually projects at one end beyond the walls so as to form a sort of portico or porch, which is supported by two posts. The women who are standing among the houses are apparently urging on their defenders or deploring their losses. Three of them have curious bulbous excrescences attached to their head-dresses or to the backs of their necks. The weapons used by the warriors are the short spears, the 'varas tolstadas' of the old Spanish writers, impelled with the aid of an atlatl or throwing-stick. The warriors carry shields bearing devices which are so much worn that they could not be made out, and over the shield there usually hung a feather cloak. The feather cloak appears to have been painted on after the outline of the shield and had been drawn, and in some cases the feather-work has been almost entirely worn away, leaving the outline of the shield still distinct." —*Maudslay.*

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* Biologia Centrali Americana.

Courtesy of the University Museum, Philadelphia.

1.

2.

MURAL DECORATIONS.
INTERIOR OF SANCTUARY, TEMPLE OF THE TIGERS.
CHICHEN ITZA.

Maler.

1.

FRONT OF TEMPLE.

Totten.

2.

REAR OF TEMPLE.

3.

MODEL OF TEMPLE (RESTORED).

BY GEORGE OAKLEY TOTTEN

NORTH TEMPLE.

BALL COURT.

CHICHEN ITZA.

TIGER (OR JAGUAR) FRIEZE.
TEMPLE OF THE TIGERS.
BALL COURT.
CHICHEN ITZA.

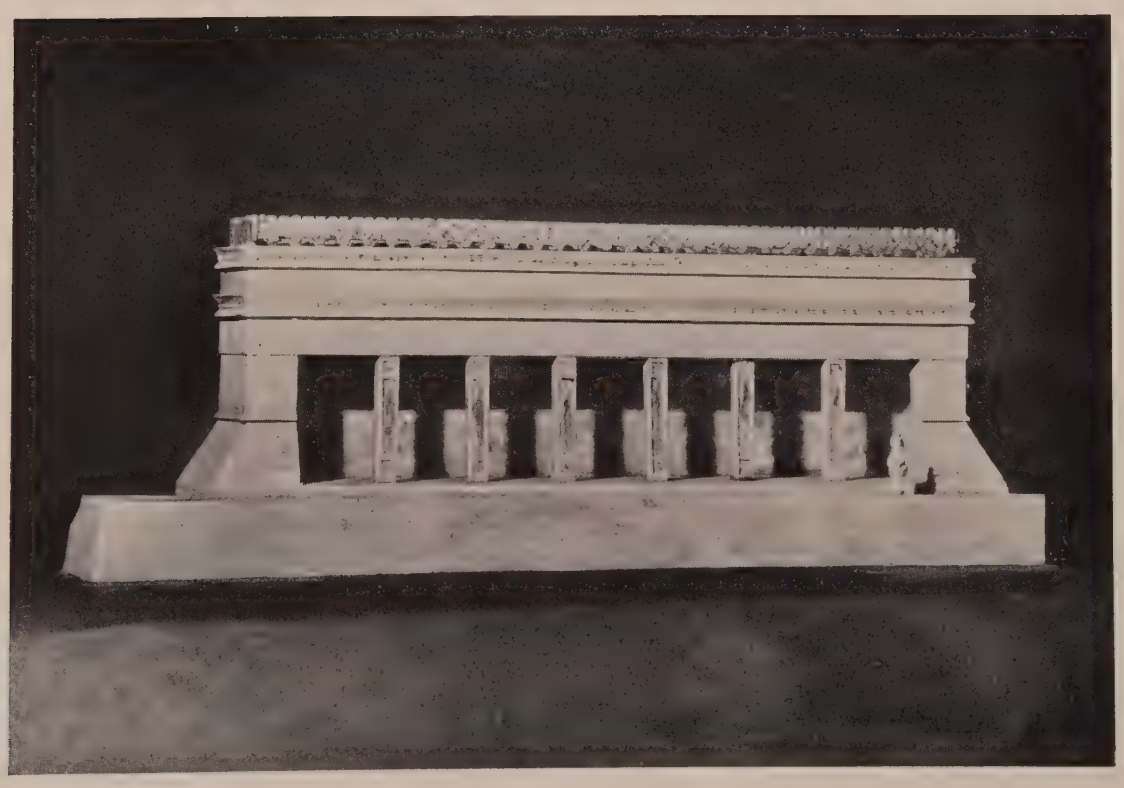
Courtesy of the Carnegie Institution.

1.

ACTUAL STATE.

NATURE DANCES HELD IN BALL COURT
OPENING OF THE AUTOMOBILE HIGHWAY.

2.



MODEL (RESTORED)
BY GEORGE OAKLEY TOTTEN

3.

SOUTH TEMPLE, BALL COURT.
CHICHEN ITZA.

RECENT EXCAVATIONS AT CHICHEN ITZA BY THE CARNEGIE INSTITUTION OF WASHINGTON, D. C.

NEGOTIATIONS with the Mexican government were completed in the summer of 1923, whereby the Carnegie Institution was granted permission to excavate and restore Chichen Itza or at least part of the city. In the spring of 1924, active work was begun under the supervision of Dr. Sylvanus G. Morley, associate of the Institution. Work was continued in 1925. The work of the Institution during these two years has been of tremendous importance and the results have more than justified the great expenditure of money and labor involved. It is estimated that it will take ten years to uncover the ancient city which occupies several square miles.

A number of very important discoveries have been made. Perhaps the most important, according to Dr. Morley, was the Group of the Thousand Columns. This stupendous group of buildings and colonnades, covering more than twenty-five acres of ground, is named for its chief architectural feature, a round column with square capital, more than a thousand of which have been counted here. The different parts of the group—pyramids, temples and colonnaded halls—are arranged around a great central plaza, the Court of the Columns, which contains four and a half acres. Its character is unique, and its detail, size and location show it to have been an important center of the life of the city.

When work began here early in February, 1924, there stood at the northeast corner of this court a high, steeply sloping hill, the sides covered with dense tropical vegetation, its top a waving beauty of towering trees. There was nothing to suggest that beneath the tangle of vines, orchids and strange foliage was one of the most beautiful and elaborate monuments of the Mayas. As the work went slowly on trees were felled, debris cleared away and the spades and picks of the excavators laid bare what proved to be a temple, with beautifully sculptured sides, the Temple of the Warriors, as it was called by the expedition.

It is a pyramid formed by four receding terraces rising to a height of thirty-seven feet and supporting a temple about seventy feet square. The pyramid is ascended by a stairway thirty-four feet broad, rising at the sharp angle of 66 degrees. The balustrades of this stairway are carved in images of the feathered rattlesnake, the tails at the bottom, the heads, with yawning, fanged mouths, at the top, projecting forward like newel posts.

The sloping sides of the three lower terraces are elaborately carved with magnificent friezes of jaguars, eagles, bears and warriors. This strange procession wound its way around all four sides of the pyramid and was originally painted in brilliant colors, blues, greens, black and white and yellow against a background of rich, deep red. The greater part of this splendid mosaic had fallen and lies scattered in confusion, but the nature of the carvings will make it possible to reassemble the stones and build them back into their original positions, so that the terraces will look as they did when erected. The top terrace alone seems to have been plain; although no part of it was in place, all the sculptured fragments were needed to reconstruct the lower terraces, and the conclusion is forced that the fourth had been left unsculptured.

The pyramid is surmounted by a temple. Plate LVII. Two serpent columns, carved like feathered rattlesnakes, with heads on the ground and tail rattles reared fifteen feet aloft, divide the facade into a triple doorway. Plate LIX.

Through this doorway one enters a spacious hall, the outer chamber of the temple. This is finely proportioned, sixty feet long by thirty feet wide; twelve square columns, with sculptured sides, formerly supported the roof. The vaulting of the interior was carried on stone piers. This was a new method of construction with the Maya, as was pointed out in describing the Temple of the

Castillo. The interior of the Temple of the Warriors is therefore the largest and most imposing interior in Maya architecture thus far discovered. The figures on these columns are warriors with plumed helmets, armed with spears, clubs and shields, all originally painted in brilliant colors. These gave the name to the building —the Temple of the Warriors.

A single doorway in the middle of the back wall gives entrance to the sanctuary proper, a chamber containing eight columns, carved and painted like the others. At either end is a painted stone bench, with a sloping back and against the back wall is the great jewel of the temple. This is a splendid altar or dais nearly fourteen feet long by eight feet deep and about two and a half feet high; nineteen statues of human figures painted in colors, their arms raised above their heads, sustain the carved and painted slabs forming the surface of the altar. These are so individual and realistic that each seems to be a portrait. This magnificent structure, standing at the center of the real wall, was without doubt the most important part of the entire temple, its holy of holies.

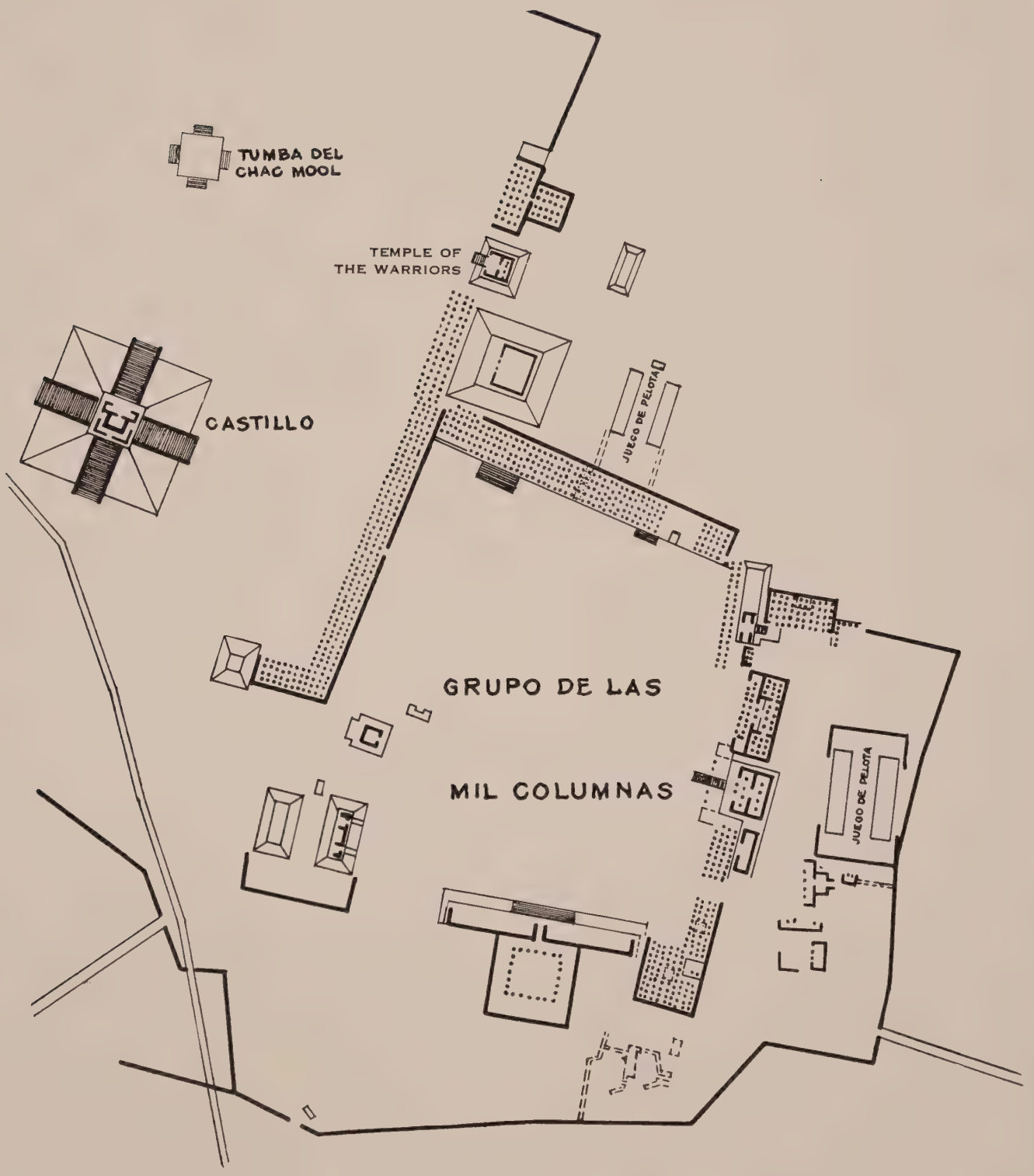
The Temple of the Warriors is also enriched with wall paintings, both within and without. Here are human figures rowing, fighting, offering incense, serpents weaving in and out, jaguars and other animals here and there—a brilliant, bizarre picture of Maya life and mythology.

The Ball Court, the Castillo, and the Group of the Thousand Columns and its temples, all show the strong Toltec influence and are of very late date; of these the architectural details of the Ball Court are the most vigorous and masterful. While the general mass of the Temple of the Warriors is very beautiful and the plan well proportioned, the details are florid and mark a decadence in the art.

The excavation at the Temple of the Warriors was the most conspicuous work of 1924, but perhaps even more important were the discoveries determining the long-suspected function of the tall, round tower known as the Caracol. Plate XXXII. This curious building, whose winding spiral lines suggested the name of caracol or snail, contains small stone passages leading from a central chamber through which the Itza made their astronomical observations. The upper part of the tower is practically a lenseless telescope, and repeated experiments established the fact that on March 22 the sun set along the line of one diagonal and on June 22 it set along the line of the other diagonal of this cell-like chamber. This was proof that the function of this tower, or at least of this particular line of sight, was to fix the position of the equinoxes and the summer solstice. Other lines of sight were undoubtedly used in determining astronomical phenomena, so it is certain that this tower was the astronomical observatory of the city of Chichen Itza. In repairing the building a hieroglyph was found which Dr. Morley read as the Maya date corresponding to 1260 A.D.

In the excavation of the Temple of the Warriors, eight beautiful, cylindrical vases were found hidden in the same hole behind one of the columns of the sanctuary. Who put them there and when are questions that must remain unanswered forever. Since they were found in the roof debris, they must have been hidden there after the roof had fallen, and since Chichen Itza was not abandoned until 1448 A.D., and since the roof of this temple could not have fallen immediately after the city was abandoned, it is probable that they were hidden there within the last four centuries.

It is the hope of everyone interested in this wonderful Maya culture that the Carnegie Institution may have the same good fortune in the future excavations that has marked its work up to the present time.



A PORTION OF CHICHEN ITZA.

Courtesy of the Carnegie Institution.

HACIENDA OF MR. EDWARD H. THOMPSON.

Located About a Mile from the Ruins.

Now the Headquarters of the Carnegie Institution Project.

CHICHEN ITZA, YUCATAN.

Courtesy of the Carnegie Institution.

TEMPLE OF THE NORTHEAST COLONNADE OF THE GROUP OF THE THOUSAND COLUMNS.

Excavated in 1924.

Courtesy of the Carnegie Institution.

TEMPLE OF THE XTOLOC CENOTE

Excavated in 1925.

Excavations by the Carnegie Institution.

CHICHEN ITZA, YUCATAN.

Courtesy of the Carnegie Institution.

1.

THRONE OR DAIS.

An Intertwining Serpent on Belt Course with Frieze of Warriors Below in the Northeast Colonnade.

Excavated by The Carnegie Institution in 1924.

CHICHEN ITZA.

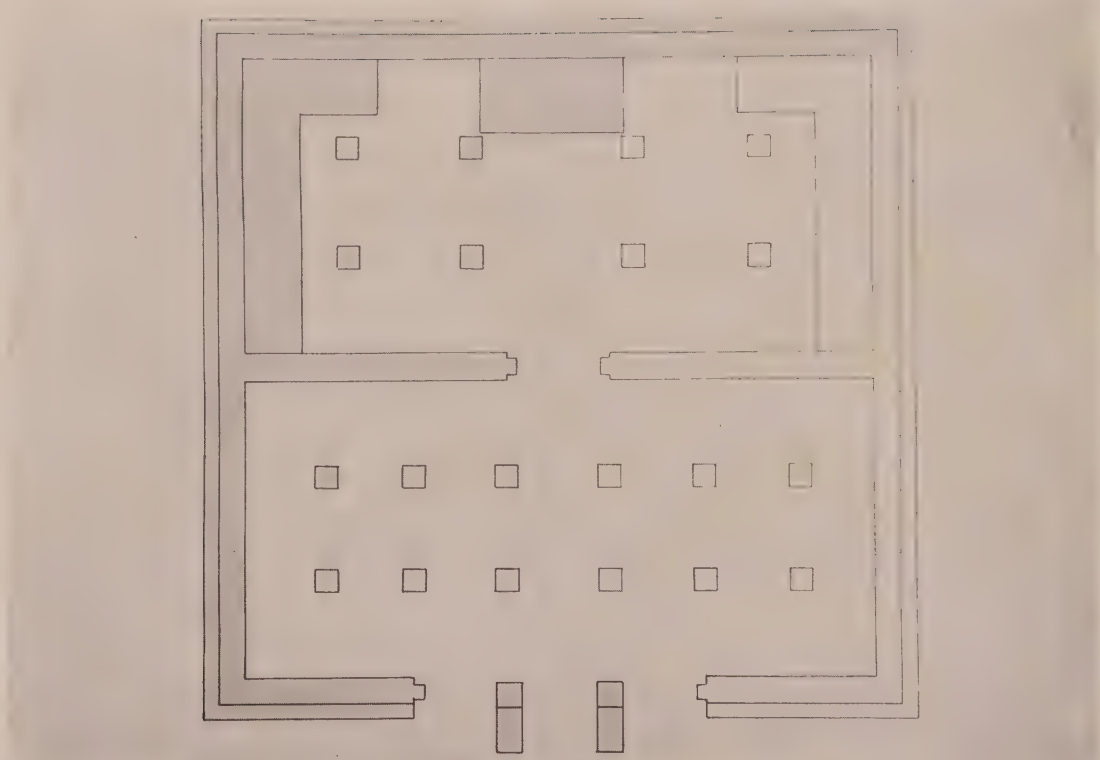
Courtesy of the Carnegie Institution.

2.

A PORTION OF THE NORTHEAST COLONNADE

Excavated by The Carnegie Institution in 1924.

CHICHEN ITZA.

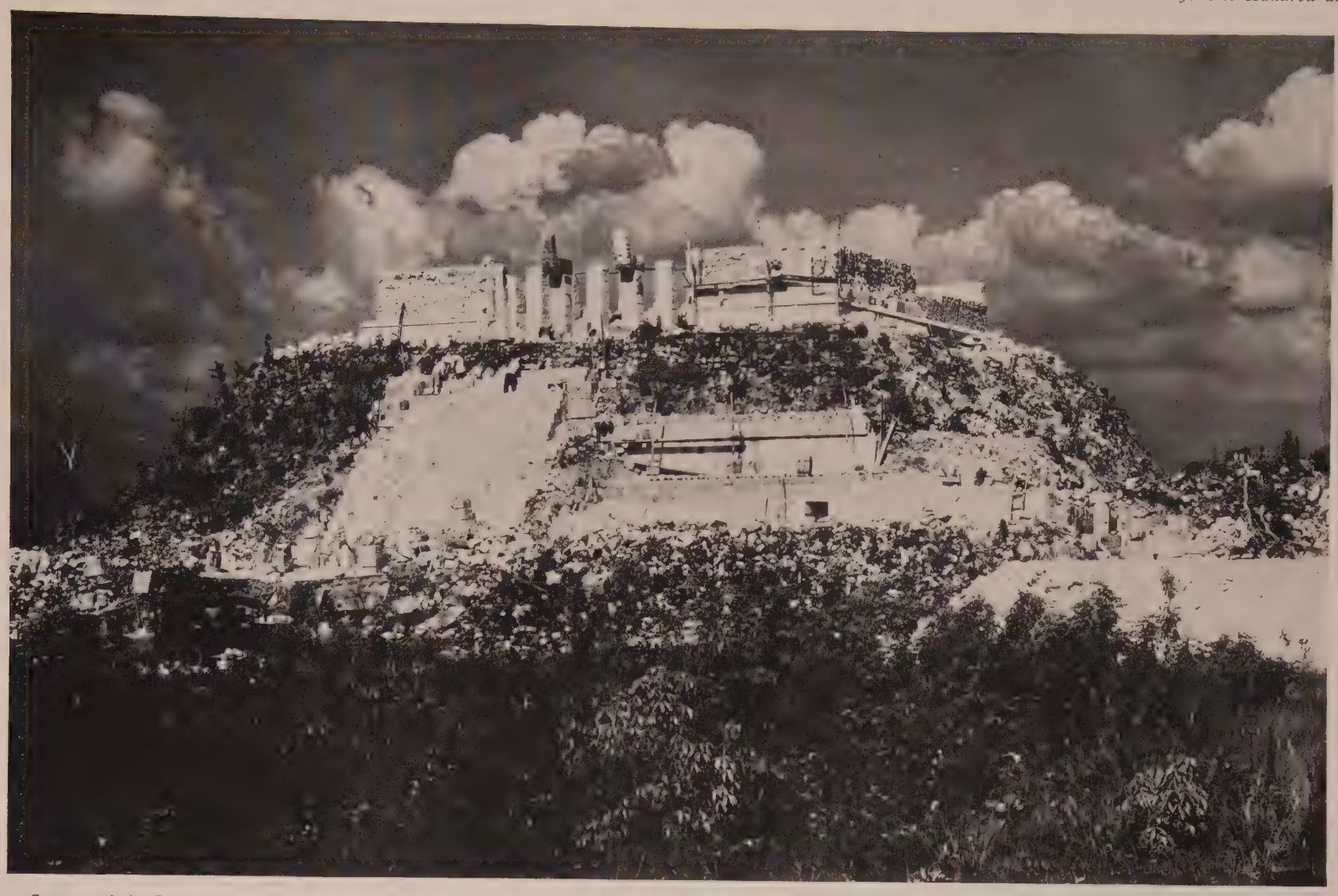


Courtesy of the Carnegie Institution.

PLAN, TEMPLE OF THE WARRIORS.

CHICHEN ITZA.

EXCAVATED BY THE CARNEGIE INSTITUTION IN 1925.



Courtesy of the Carnegie Institution.

Courtesy of the Carnegie Institution.

WESTERN FRONT
TEMPLE OF THE WARRIORS.
CHICHEN ITZA, YUCATAN.
EXCAVATED BY THE CARNEGIE INSTITUTION IN 1925.

Courtesy of the Carnegie Institution.

OUTER CHAMBER (Looking Northward.)
TEMPLE OF THE WARRIORS.
CHICHEN ITZA, YUCATAN.

EXCAVATED BY THE CARNEGIE INSTITUTION IN 1925.

Courtesy of the Carnegie Institution.

MAIN STAIRWAY.

CHACMOOL AT CHICHEN ITZA

Courtesy of the Carnegie Institution.

FEATHERED SERPENT COLUMNS AT ENTRANCE.

Courtesy of the Carnegie Institution.

COLUMNS OF THE OUTER CHAMBER.

TEMPLE OF THE WARRIORS.
CHICHEN ITZA, YUCATAN.

EXCAVATED BY THE CARNEGIE INSTITUTION IN 1925.

Courtesy of the Carnegie Institution.

STANDARD BEARER.

Courtesy of the Carnegie Institution.

DECORATION OF MAIN FACADE.

Courtesy of the Carnegie Institution.

HEAD OF FEATHERED SERPENT COLUMN
AT ENTRANCE.

DETAILS FROM THE
TEMPLE OF THE WARRIORS.
CHICHEN ITZA, YUCATAN.

Courtesy of the Carnegie Institution.

STANDARD BEARER.

LABNA, KABAH, ETC.

Neither history nor tradition tells us anything of these great cities. The ruins themselves speak of a brilliant past, for here we find the ruins of many unusual and interesting buildings. The style of architecture is very original and quite unlike anything found at either Uxmal or Chichen Itza. Only the most superficial accounts have thus far been published of Labna, Kabah and a score of other cities in this part of Yucatan. Stevens and Gann have touched upon the subject. It is almost virgin soil and he who investigates will reap rich returns.

The architecture of these cities seems to have been derived from a wooden prototype. There are remains of buildings at Tikal which may have inspired the architects of this region but this can only be determined by more careful study, of which these splendid ruins are worthy.

THE PALACE.

LABNA.

1.

Totten.

2.

THE PALACE.

LABNA.

Totten.

3.

THE PALACE.

LABNA.

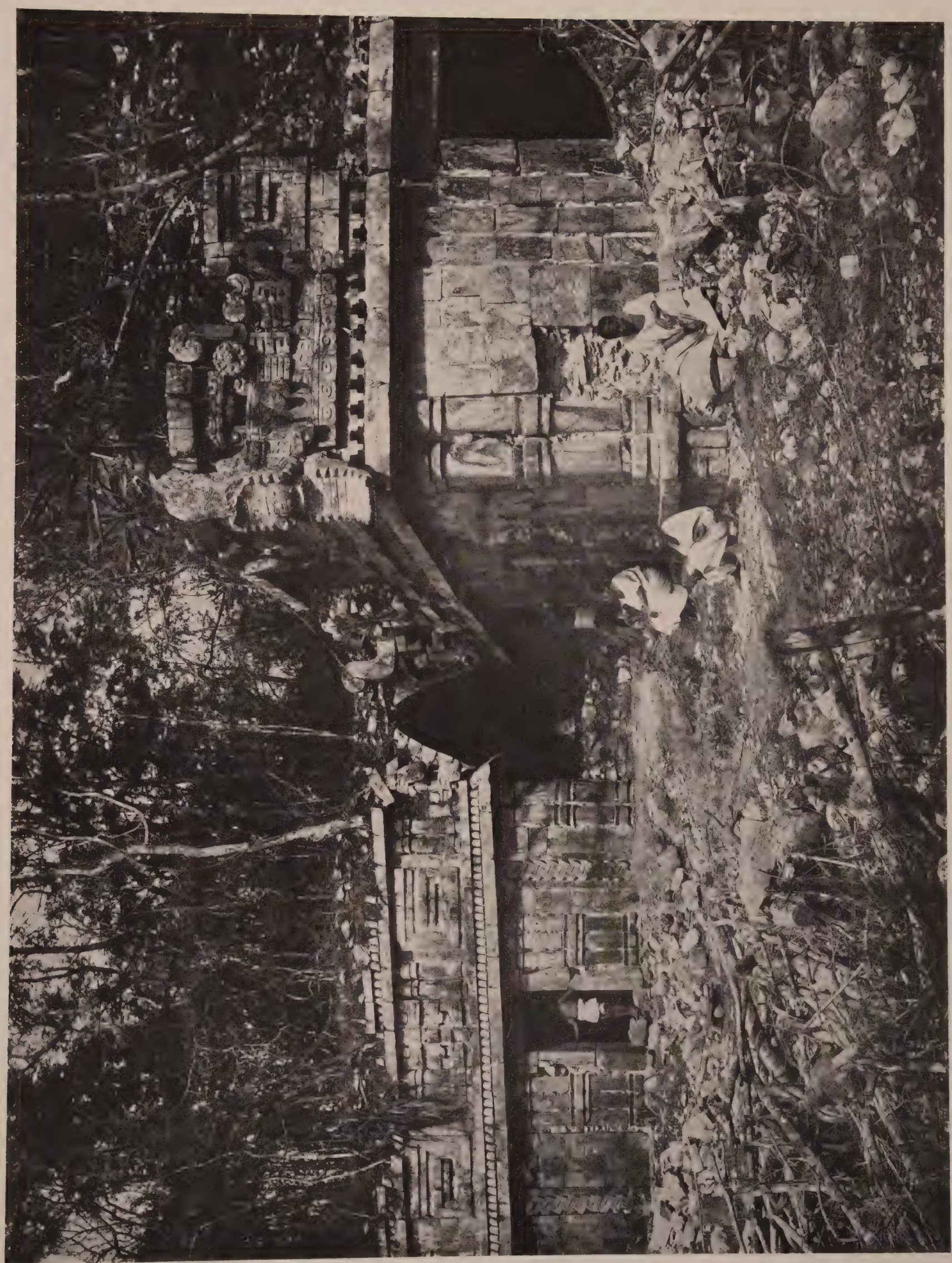
In the above view, the Author is shown standing on the left.

Totten.

4.

THE PRINCIPAL TEMPLE.

LABNA.



THE PALACE.
LABNA.

Maler

Maler.

ONE OF THE FINEST MAYA PORTALS.

It is the inner facade of an arched gateway 10 ft. wide leading into what was formerly a courtyard of a large building
At either side of the arch is the doorway, giving access to two small rooms, which also have
an opening into the large arch.

LABNA.

Maler. 1.

SECOND STORY OF PALACE.

SAYIL.

2.

PALACE.

SAYIL.

3.

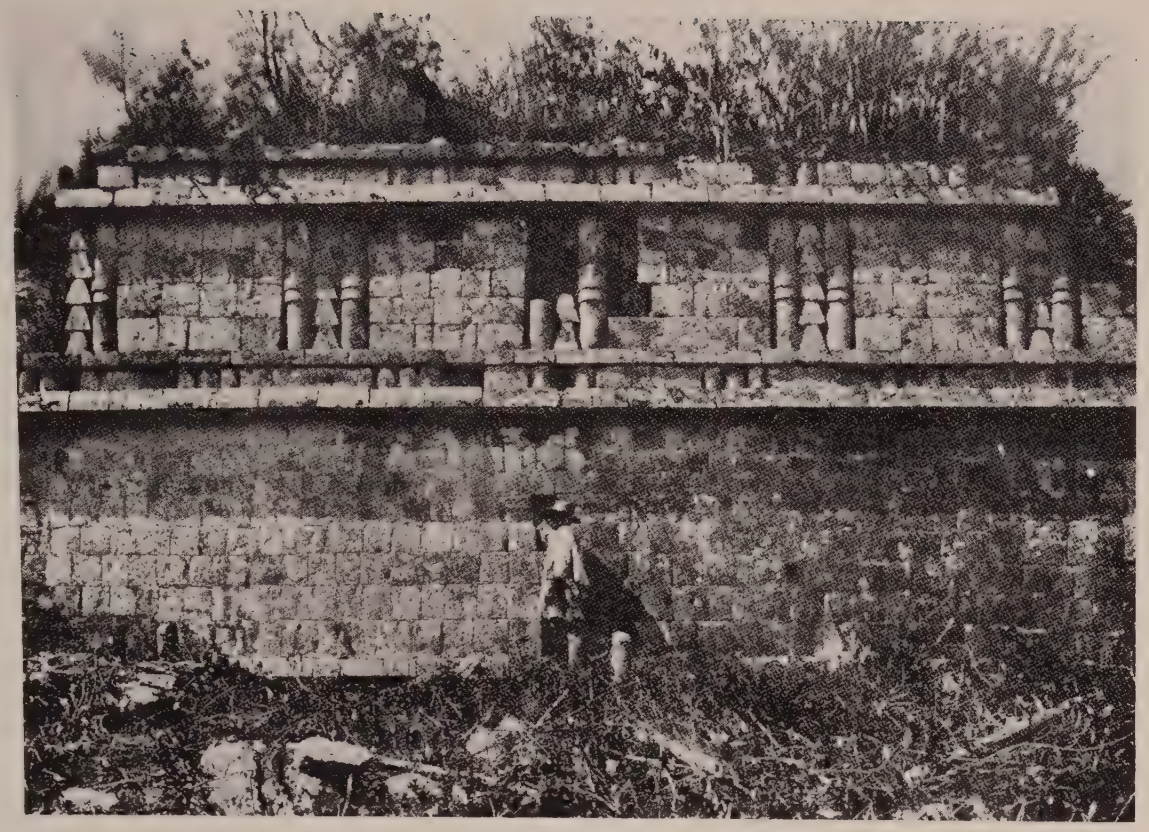
KEWIC.

FACADE OF STRUCTURE.

4.

SACBE.

FACADE OF THE PRINCIPAL STRUCTURE.

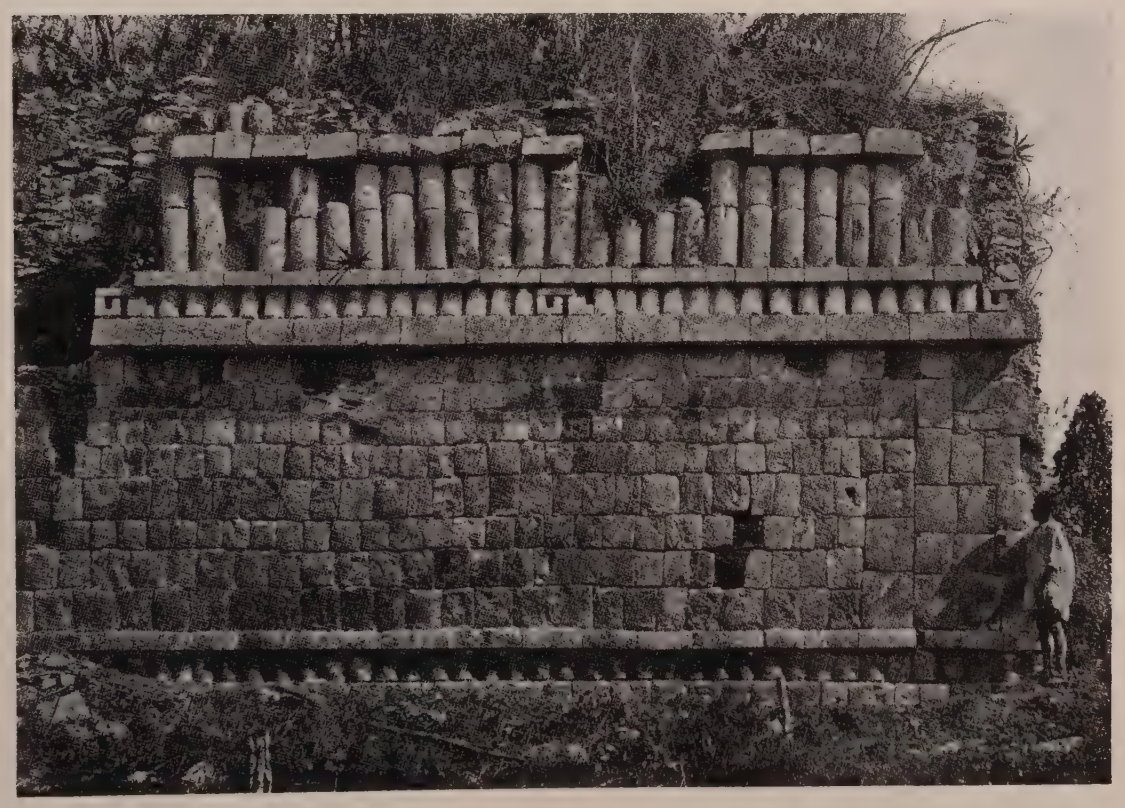


1.

NORTH SIDE OF STRUCTURE
XKALUPOCOCH

2.

ANGLE OF STRUCTURE.
XAMPON



3.

STRUCTURE.
ACAMBALAM

HOUSE OF FATHER REJON.
COZUMEL.
Photo by R. R. Bennett.
Similar to Present Day Indian Abode.

Maler.
Courtesy of the Tulane University, New Orleans.

TEMPLES AND PALACES
HOCHOB.

LEFT WING OF PRINCIPAL STRUCTURE.
HOCHOB

Maler

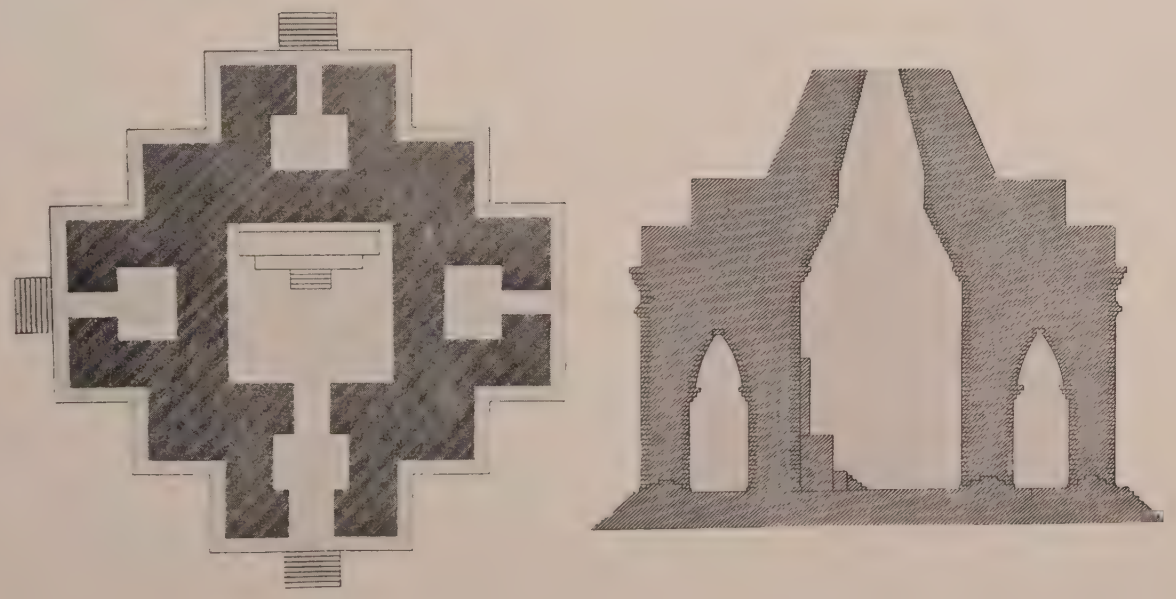
PALACE.

HUNTICHMUL.

ACANCEH.

Temple with Stucco Decoration, very unusual in Design.

Discovered by E. H. Thompson.



COLI BENING OR BOOLOOS

BRAMBANAN

Maler

PALACE.

KABAH.

Maler.

STRUCTURE ORNAMENTED WITH MASK PANEL ABOVE DOORWAY
KABAH.

UXMAL.

THE CITY, located directly south of Merida, is but ten miles from the railroad. Muna is the nearest station. There is a great hacienda a mile and a half from the ruins where accommodations may be had. Many of these plantation buildings are beautiful examples of Spanish colonial architecture.

Uxmal is located in the foothills which cross the state from east to west. Although there are no rivers in Yucatan, there are depressions in these hills where water may have remained for some time after the rains, and owing to its great importance during the dry season it may have suggested the location of the city. As the population increased, these depressions were converted into artificial lakes or reservoirs.

They are now so overgrown by tropical vegetation and so unhealthful from malaria that they are quite unexplored. The unhealthfulness of Uxmal has to some extent hindered its exploration but when it is systematically investigated many interesting buildings will be brought to light.

Of the history of the people we know little save that Uxmal had been in existence a short time, according to da Landa, second Bishop of Yucatan, when an alien people under the leadership of their chief, Tutul Xiu, took possession, and held sway for several centuries. About the year 1000 A. D. it entered the Federation of States with Mayapan and Chichen Itza. For the next 200 years ensued a period of great prosperity. During this time the arts flourished and great buildings were erected.

The capitol of the Federation was Mayapan and the supreme power was held by the Cocom family. But the Cocoms became tyrannical and oppressive. The result was civil war. The ruler of Uxmal proceeded against Mayapan, completely destroying it and slaying its rulers.

After the destruction and dissolution of the Federation, Uxmal was abandoned and a new capitol was founded at Mani, some 30 miles distant.

The abandonment of cities, so common throughout the Maya era, is difficult to understand.

The city seems to have been of great extent equaling if not rivaling Chichen Itza itself.

The buildings that we know do not seem to have formed part of any civic center as do those of many of the cities of the Classic Period, but for nobleness of proportion, imagination of the detail, and the splendid scale of the ornament, the buildings of Uxmal stand unrivalled in Maya art.

The Palace of the Governor and the Nunnery Quadrangle, both of purely Mayan origin, are the two most beautiful buildings extant of pre-Columbian times.

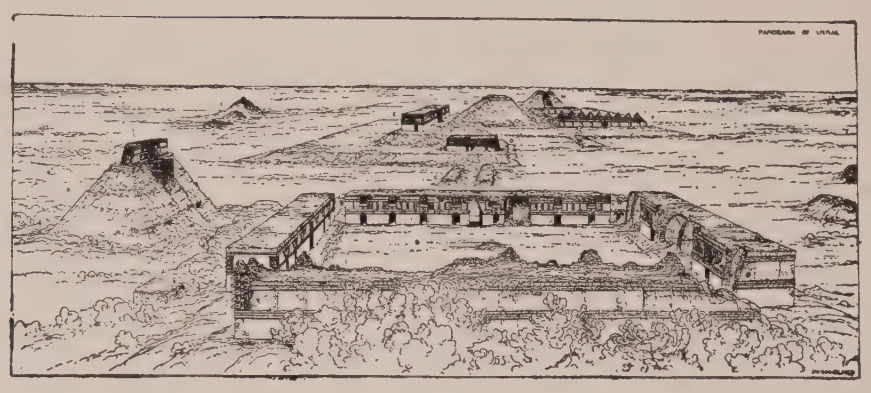
In addition to the large reservoir which supplied the whole city, Uxmal had a system of underground cisterns. These are called chultunes and they were located in the courts or on terraces in front of the buildings; for example, the Nunnery Quadrangle has several in its court and there are also several in front of the Governor's Palace—in fact, they are found throughout the city associated with the more important structures.

Courtesy of the San Diego Museum.

PANORAMA OF THE RUINS.

From a Painting by Carlos Vierra.

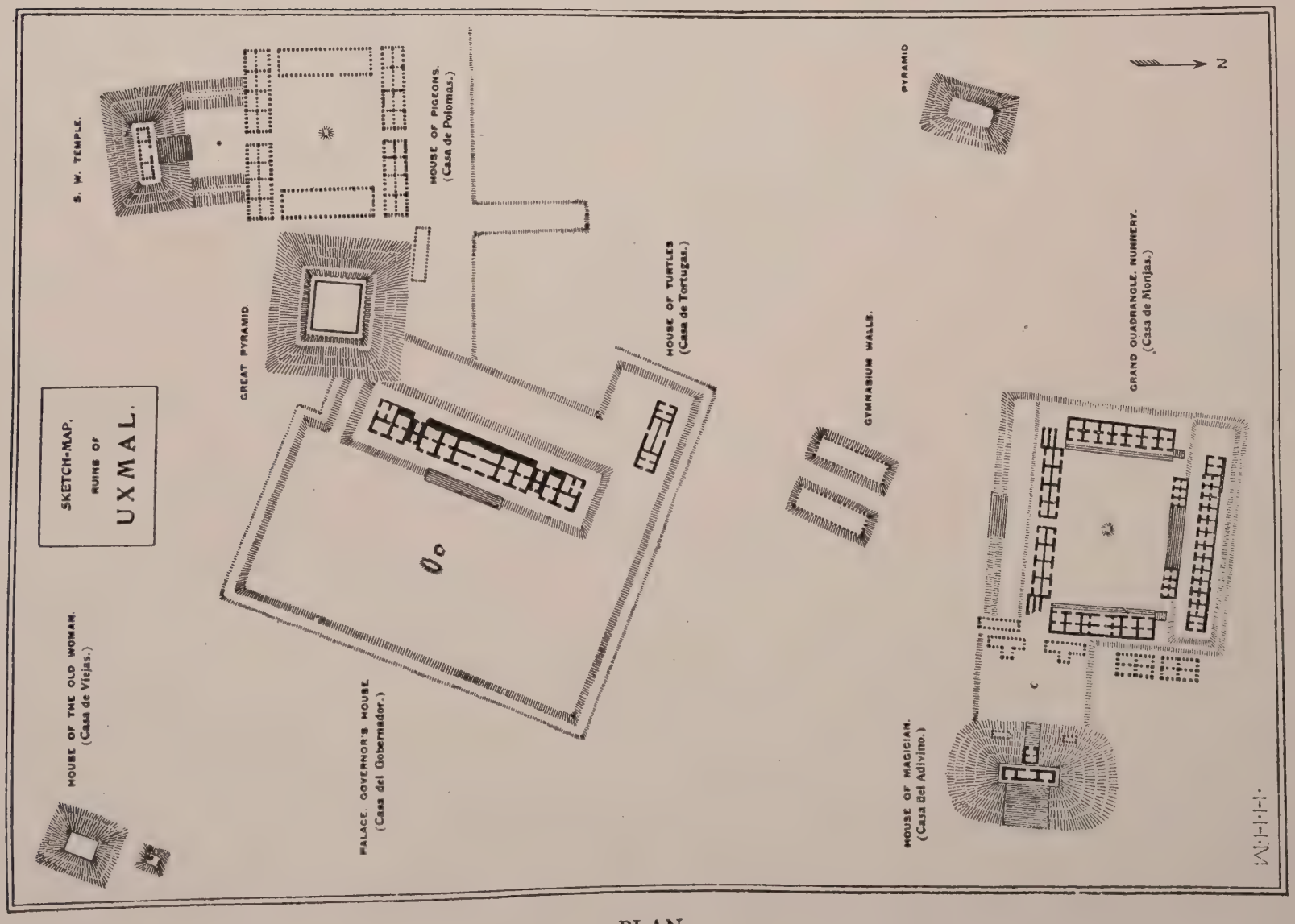
(Looking Northeast.)



PANORAMA OF THE RUINS.

By Dr. W. H. Holmes.

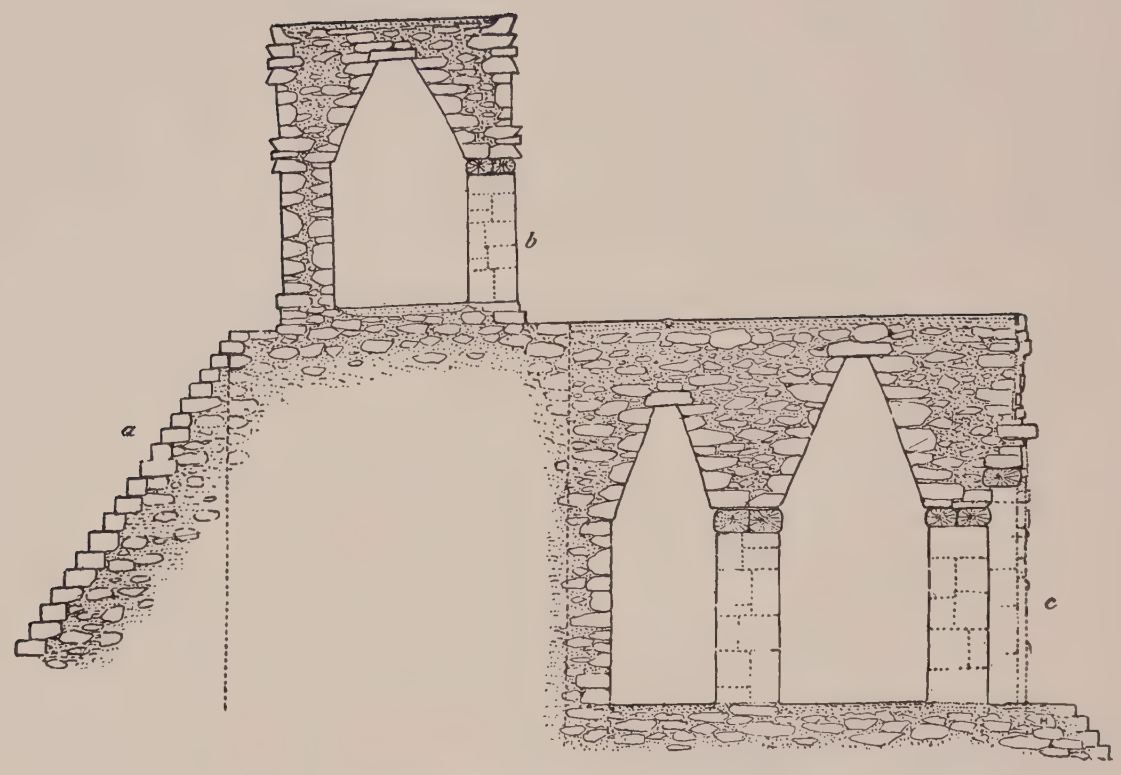
(Looking South.)



PLAN.

UXMAL

YUCATAN



SECTION THROUGH THE TEMPLES OF THE GREAT PYRAMID,
UXMAL.

a. Grand stairway rear of pyramid.
b. Upper Temple.
c. Lower temple.

The charming little temple surmounting the so-called House of the Magician, Uxmal, is exquisitely refined and delicate in design and detail. It suggests work of the Louis XVI period of France.

The pyramid was doubtless originally faced with cut stone, probably removed to supply building material for the nearby hacienda.

The Maya pyramids are usually square or rectangular in plan. This one is an exception; it is oval. It measures on the base 160 by 240 feet and is 80 feet to the platform above. The little temple is 12 by 70 feet. Plate LXXI. Plate LXXII is from a full size detail made directly from the upper temple.

The second temple at the base of the first was built at a later date. It is very different in style and might be called Maya Rococo. It is of the same ornate period as the eastern façade of the Nunnery at Chichen Itza. Plate XXXI. It is quite likely that a grand staircase lead up to it. There is still a staircase on the rear face of the pyramid.

It is difficult to understand the passage at the ground level below the temple. It contains a very interesting cornice, or string course, which may have extended entirely around the pyramid. The drawing, Fig. LXXII, was made from a measured drawing from the actual cornice. There was a very splendid head in the center of this passage which is now in the National Museum of Mexico City.

Totten.

1.

SO-CALLED HOUSE OF THE MAGICIAN.

UXMAL.

PYRAMID SURMOUNTED BY TWO TEMPLES.
THE LOWER ONE IS PROBABLY MUCH LATER.
MAYA PYRAMIDS ARE USUALLY SQUARE OR RECTANGULAR IN PLAN,
THIS ONE IS OVAL.

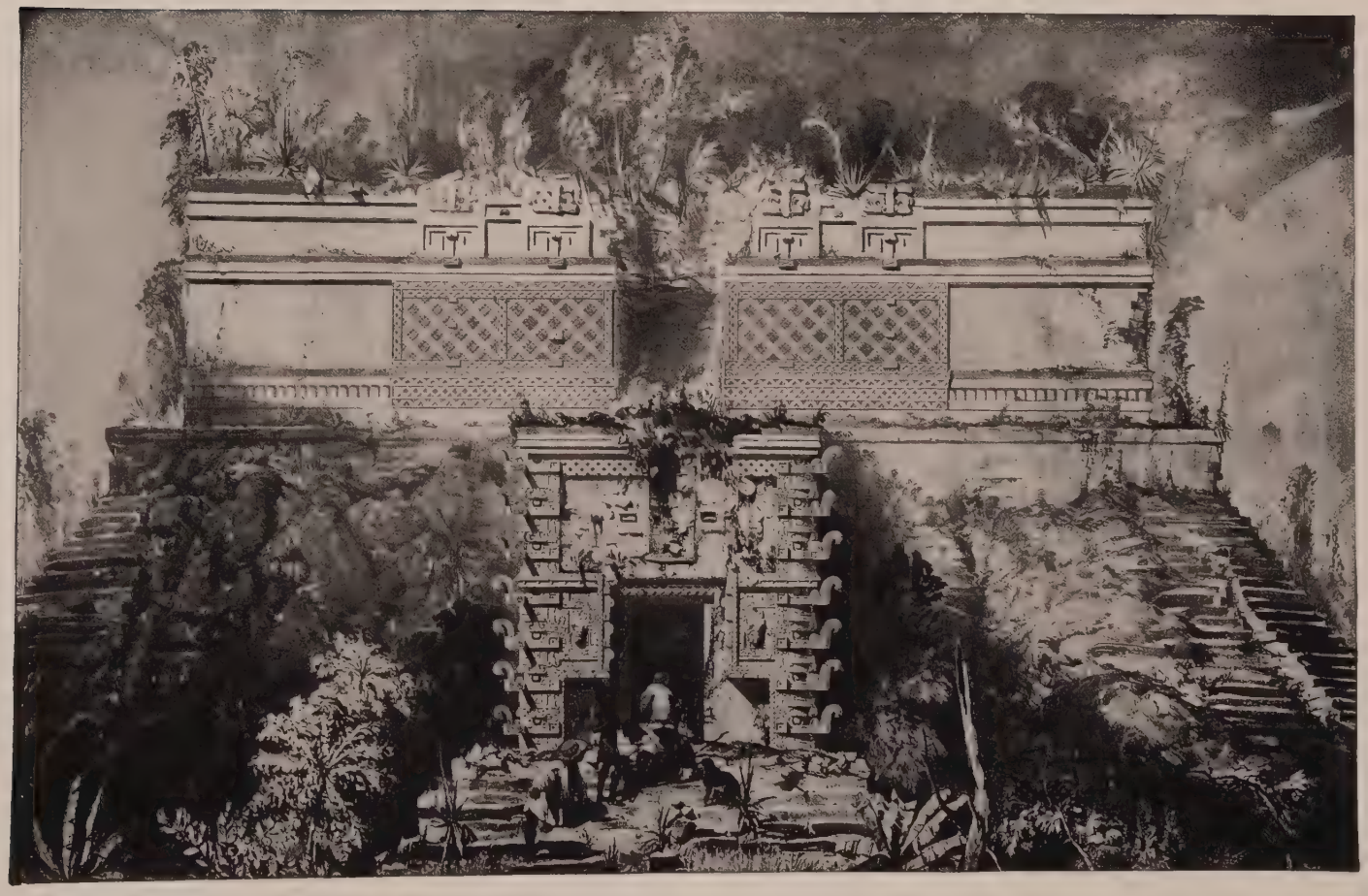
Courtesy of Ernest L. Crandall.

2.

GREAT PYRAMID OR HOUSE OF THE MAGICIAN TO THE RIGHT.
BALL COURT IN FOREGROUND AND NUNNERY IN DISTANCE.
UXMAL (LOOKING NORTH).

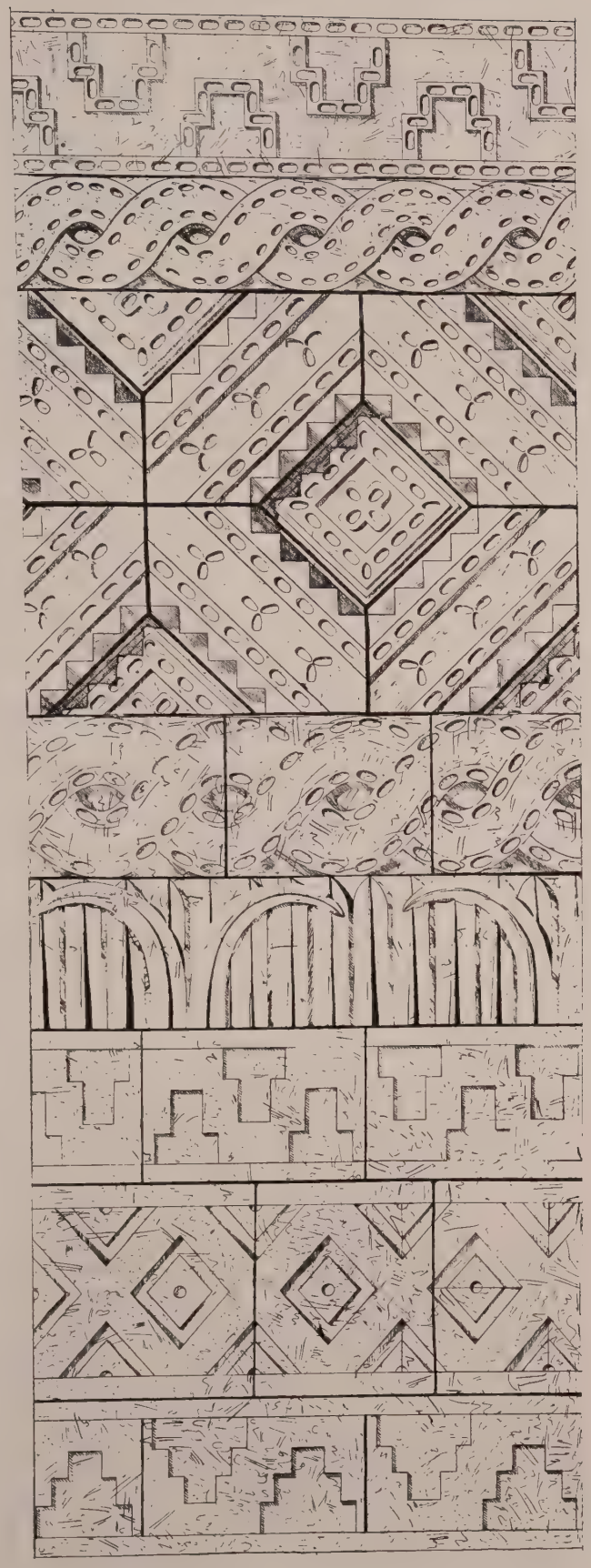
Totten.

FROM PHOTOGRAPH TAKEN IN 1919.

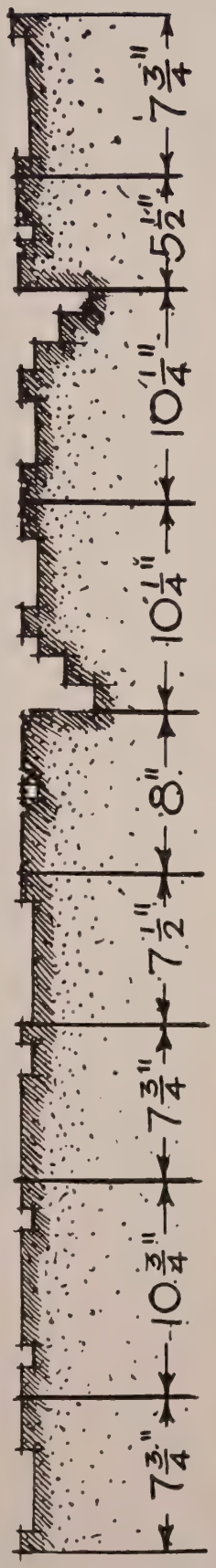


FROM DRAWING BY F. CATHERWOOD MADE IN 1841.

TEMPLES SURMOUNTING
THE HOUSE OF THE MAGICIAN OR GREAT PYRAMID.
UXMAL.



Measured and Drawn by George Oakley Totten, Jr. 1.



2.

Totten. 3.

DETAILS, UPPER TEMPLE.
HOUSE OF THE MAGICIAN.
UXMAL.

From drawing by F. Catherwood.

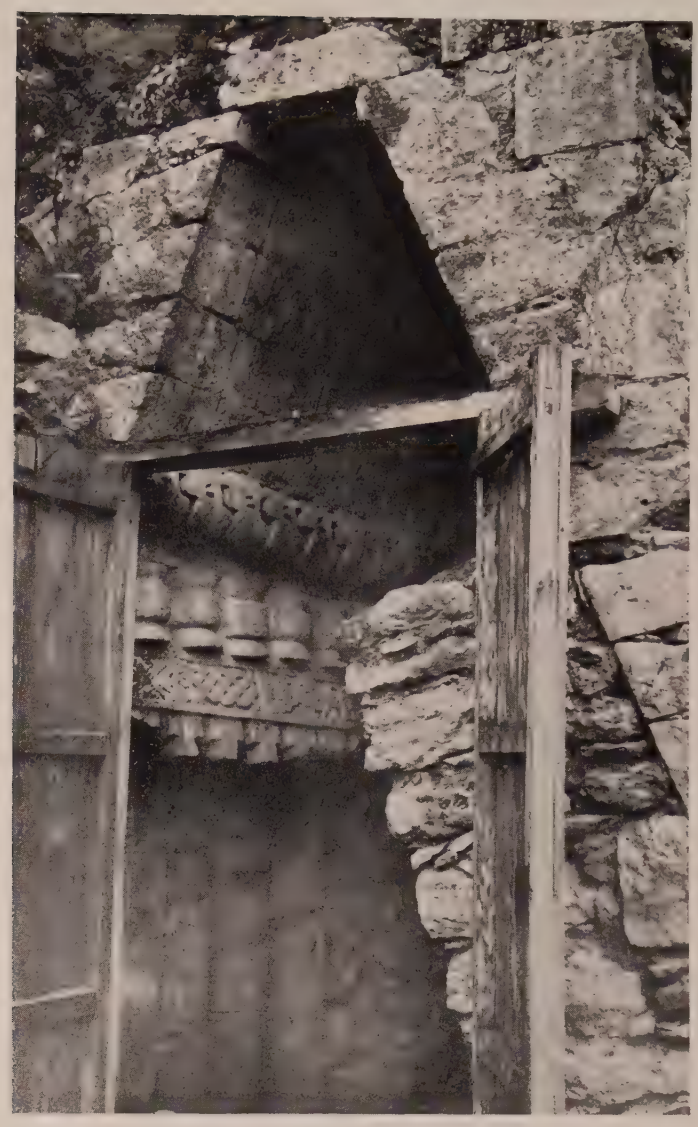
LOWER TEMPLE. AN EXAMPLE OF THE MAYA ROCOCO.

HOUSE OF THE MAGICIAN

UXMAL.

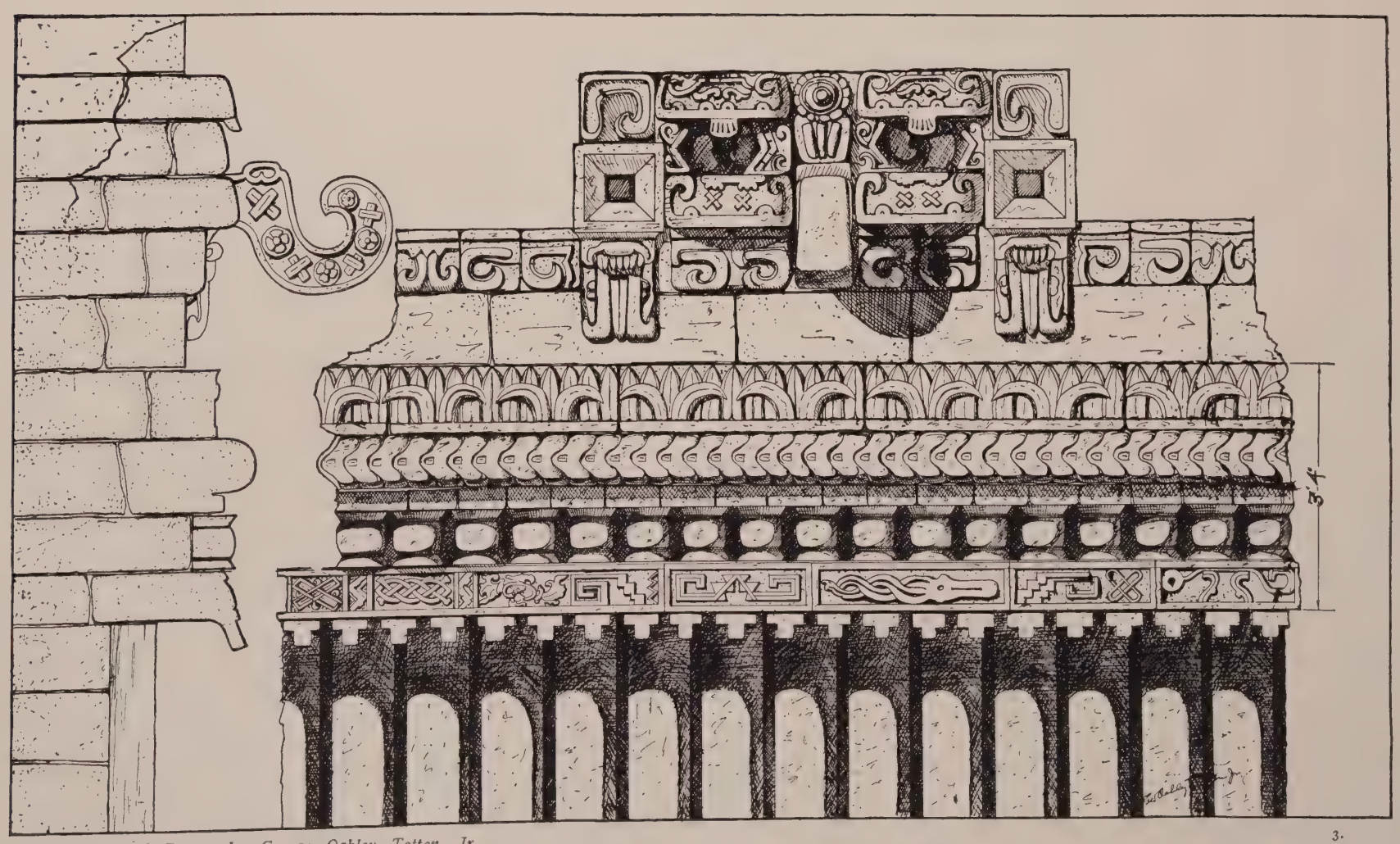
Totten. 1.

NOTE THE CURIOUS PASSAGE UNDER THE STAIRWAY.

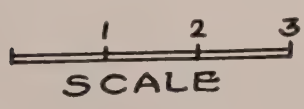


Totten. 2.

PASSAGE UNDER STAIRWAY.



Measured and Drawn by George Oakley Totten, Jr. 3.



THE REMARKABLE CORNICE IN PASSAGE AT BASE OF PYRAMID OR HOUSE OF THE MAGICIAN.

THE GREAT PYRAMID AT UXMAL.

CASA DE MONJAS OR NUNNERY QUADRANGLE

UXMAL

THE GREAT Casa de las Monjas, commonly called the Nunnery Quadrangle, is without question the grandest group of Maya buildings that has been preserved.

This group consists of four buildings, forming a hollow square, elevated upon a terrace 214x258 feet and about 20 feet high.

A monumental staircase leads to a great portal, the Maya arched doorway which is 10 feet wide and 15 feet high gives access to the court yard.

The building through which one passes is on the level of the court, while those on the right and left are raised upon terraces about 5 feet high, and the one in the rear facing the entrance is elevated on a still higher terrace of about 15 feet.

The principal façades of these four buildings face the courtyard. They are similar in plan and construction although radically different in design. There is nevertheless a harmony of treatment, an originality of detail, a grandeur of conception, that places this courtyard among the most notable in the history of architecture.

The skyline of the entrance and two side buildings is straight, while that of the building opposite the entrance is broken by a richly treated series of gables.

The plan (Plate LXIX) of the buildings with their double chambers is typical, and grouping of four buildings about a court was common during the Classic Period. There are several groups not unlike this in plan at Tikal. It is possible that some of these older structures may have been just as remarkable as the Quadrangle, but their façades are too far gone to judge.

Buildings with courtyards are common in hot countries and have the advantage of always having one side in the shade, but four buildings surrounding a hollow square with an open space at the corners have the additional advantage of better circulation of air.

It is not unlikely that religious gatherings were held in this courtyard, as with the steps surrounding three sides where great crowds could be seated, elaborate and magnificent ceremonies could have been held in the open central space.

But a brief description of the façades will be given as they have been so well described and illustrated.* The buildings are entirely of stone and were richly colored. They all, as usual in Maya architecture, appear to be two stories in height, the lower of perfectly plain, unbroken ashler masonry, save for the doorways. The architraves and lintels of these have long since disappeared, though they were probably enriched by sculptural figures. What would appear to be the second story is a broad band of rich decoration, with a belt course or medial cornice below and a main cornice above.

Of the various motives of decoration the "Mask Panel" has been the most extensively employed. It is used as quoins on the corners of all the buildings and over many of the doorways. The mask panels originally had the elephant-like trunks or snouts. These have nearly all been knocked off maliciously or by the Indians for superstitious reasons. Those shown on Plate LXXXIII are among the few remaining examples. Sometimes the trunks turned upward, sometimes downward. While the masks on the different buildings are similar in mass, they vary in detail.

Next in importance to the mask panel is the serpent. It appears on the east, west and north fronts. The colossal serpent on the West Range—against a diaper pattern background—dividing the façade into panels, is unique in Maya art and must be regarded as a masterpiece of sculptural decoration.

The next decorative feature in importance is the V-shaped horizontal bar motive, which occurs on the Eastern Range. It is

* This building has been minutely described by Charnay, "Ancient Cities of the Old World," Holmes, "Ancient Cities of Mexico," Stevens, Catherwood, and Bancroft.

also found on the facade of the Palace of the Governor. Plate LXXIX. It may have been inspired from wooden cribbing, it is at any rate, a very original and effective piece of design. The ends of the bars terminate in serpents' heads. Against the bars, near the top, are colossal heads. Plate XCIII. These seem to be in imitation of turquoise masks and in design to resemble the Sun God.

The miniature *calli* or house motive is also unusual and doubtless symbolic. Plate LXXX. It is used as an over-lintel ornament on alternate doorways of the Northern and all doors of the Southern Range. The ground work or field in all cases is a sculptural lattice work. This motive also occurs on the Palace of the Governor and the Monja at Chichen Itza.

Colonettes are introduced as a decorative feature in the base mould, and in the medial and main cornices of the facades.

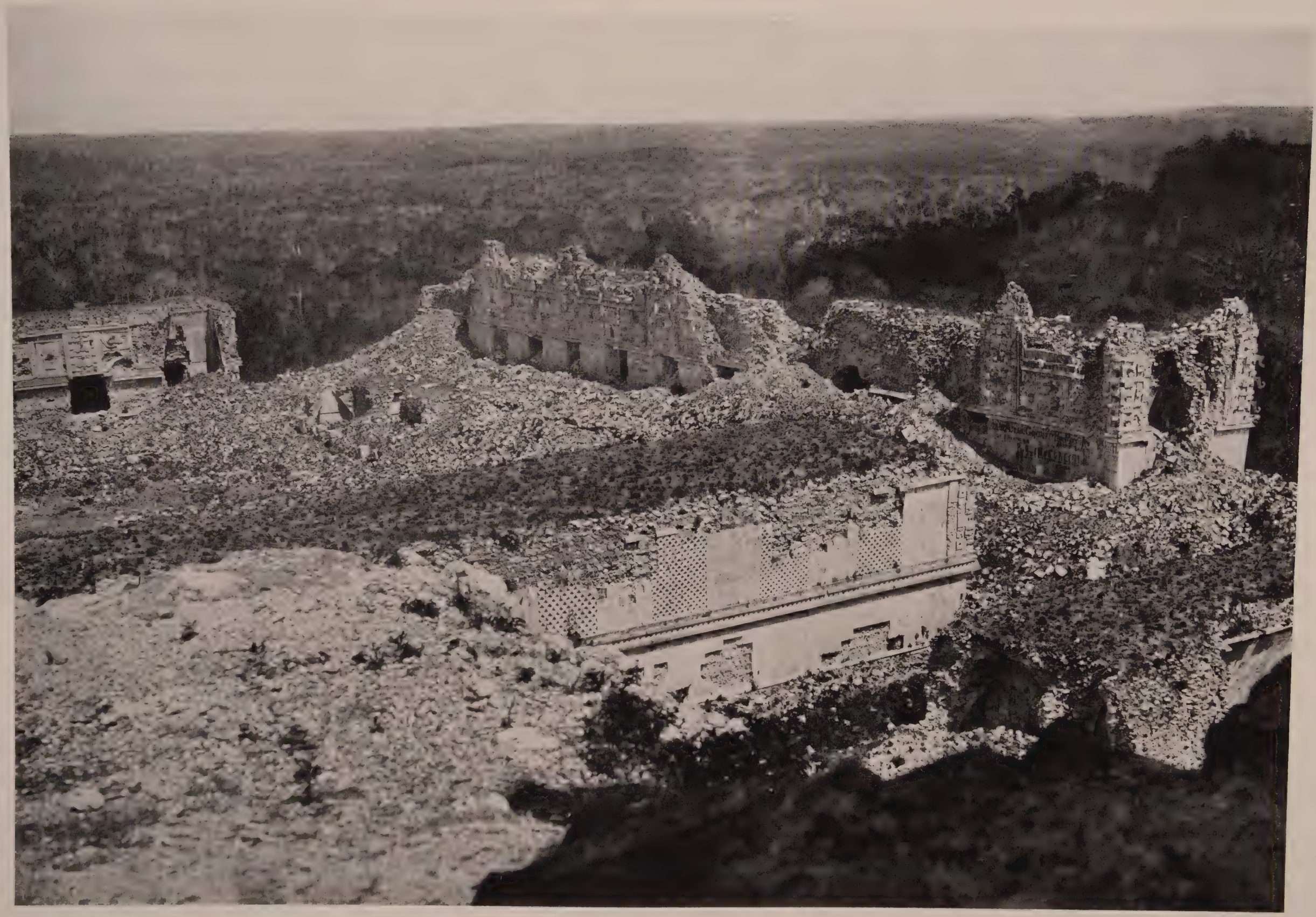
Many human figures in high relief were used on the Western Range according to de Waldeck. Plate LXXXII. These have all been carried away.

We thus find eight or ten motives of symbolic decoration on the façades of the Monja—the significance of which we have no idea.

The interiors of these buildings were plastered.

The Northern Range is built over and includes the ruins of a still older building.

The great court yard, majestically and symmetrically arranged, with an infinite variety of detail—unlike anything in European architecture—its beauty still further enhanced by gorgeous color, is unsurpassed.



Totten.

THE SO-CALLED CASA DE MONJAS, OR NUNNERY QUADRANGLE.
PROBABLY A PRIESTLY RESIDENCE.

Four separate buidings form a hollow square. All the facades are of different design but harmonize perfectly. A truly monumental group.

Maler.

DETAILS OF NORTHERN FACADE OF NORTH RANGE,
NUNNERY QUADRANGLE.
UXMAL.

Totten

SOUTHERN FACADE OF NORTH RANGE,
NUNNERY QUADRANGLE.
UXMAL.

The skyline of this facade is broken by gables rising over alternate doorways. These are made of superimposed mask panels. The broad frieze extending entirely around the building is one mass of symbolic ornament.

From drawing by F. Catherwood.

DETAIL OF SOUTHERN FACADE, NORTH RANGE OF NUNNERY QUADRANGLE.

UXMAL.

Totten.

WESTERN FACADE OF EAST RANGE OF NUNNERY QUADRANGLE.

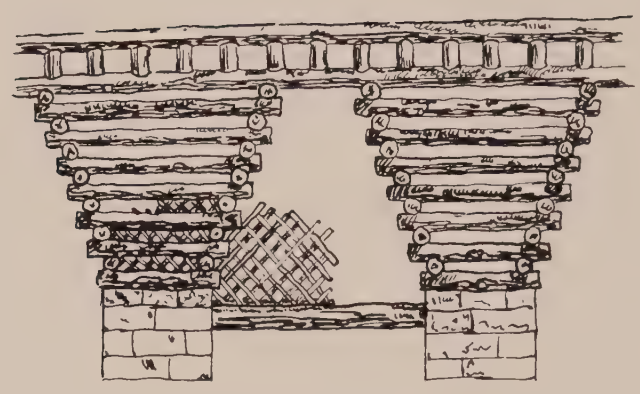
PYRAMID OF THE MAGICIAN IN DISTANCE.

UXMAL.

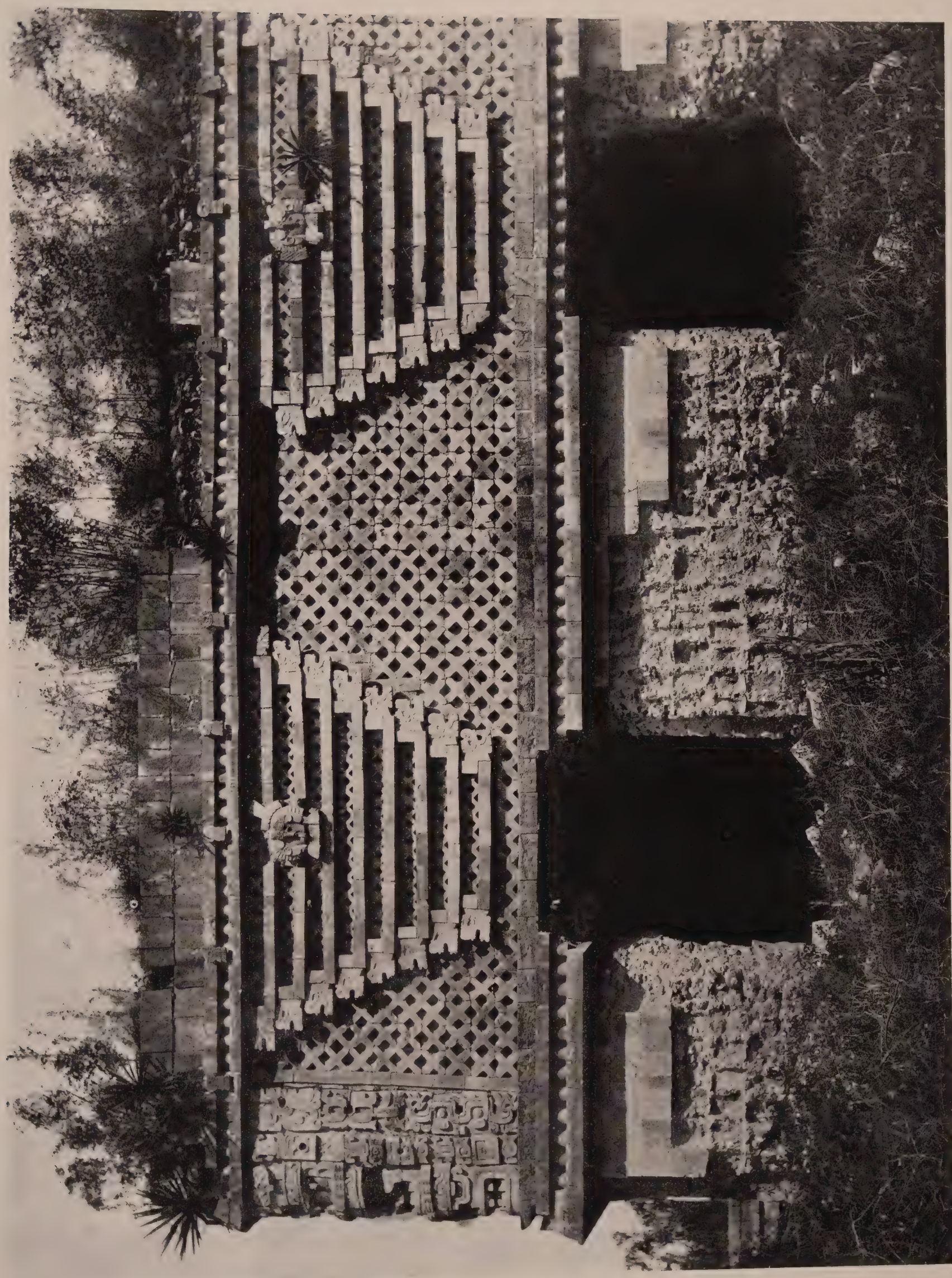
Totten.

EASTERN FACADE OF EAST RANGE OF NUNNERY QUADRANGLE.

UXMAL.

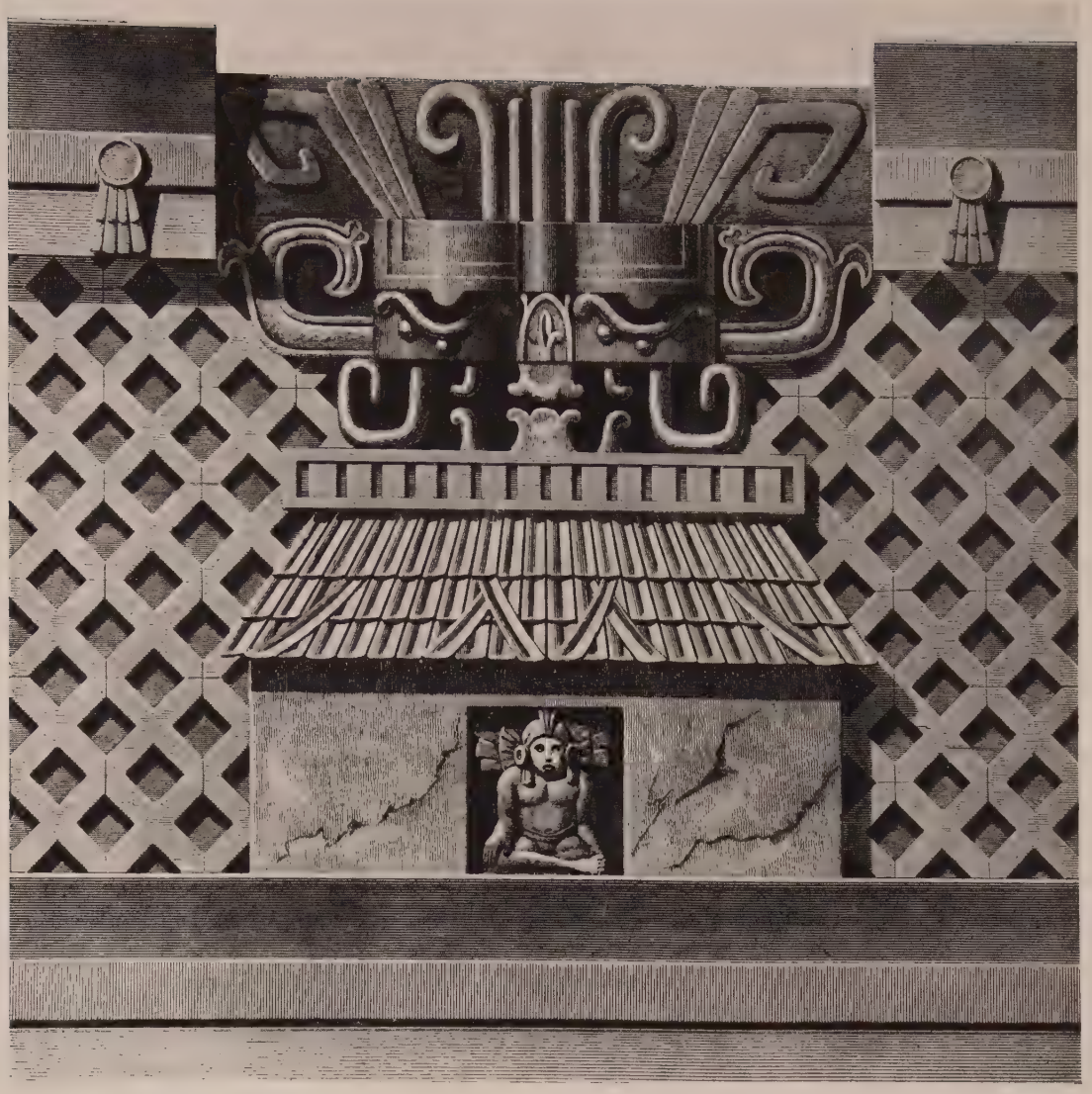


WAS THE DECORATION OVER THE
CENTRAL DOORWAY OF THE PALACE
OF THE GOVERNORS AND ON THE
EAST RANGE OF THE NUNNERY
INSPIRED FROM WOODEN
CRIBBING?



DETAIL, WESTERN FACADE, EAST RANGE OF NUNNERY
QUADRANGLE.
UXMAL.

Maler.



From drawing by de Waldeck. 1.

DETAIL OF THE NORTHERN FACADE OF THE SOUTH RANGE BUILDING, NUNNERY QUADRANGLE.
UXMAL.

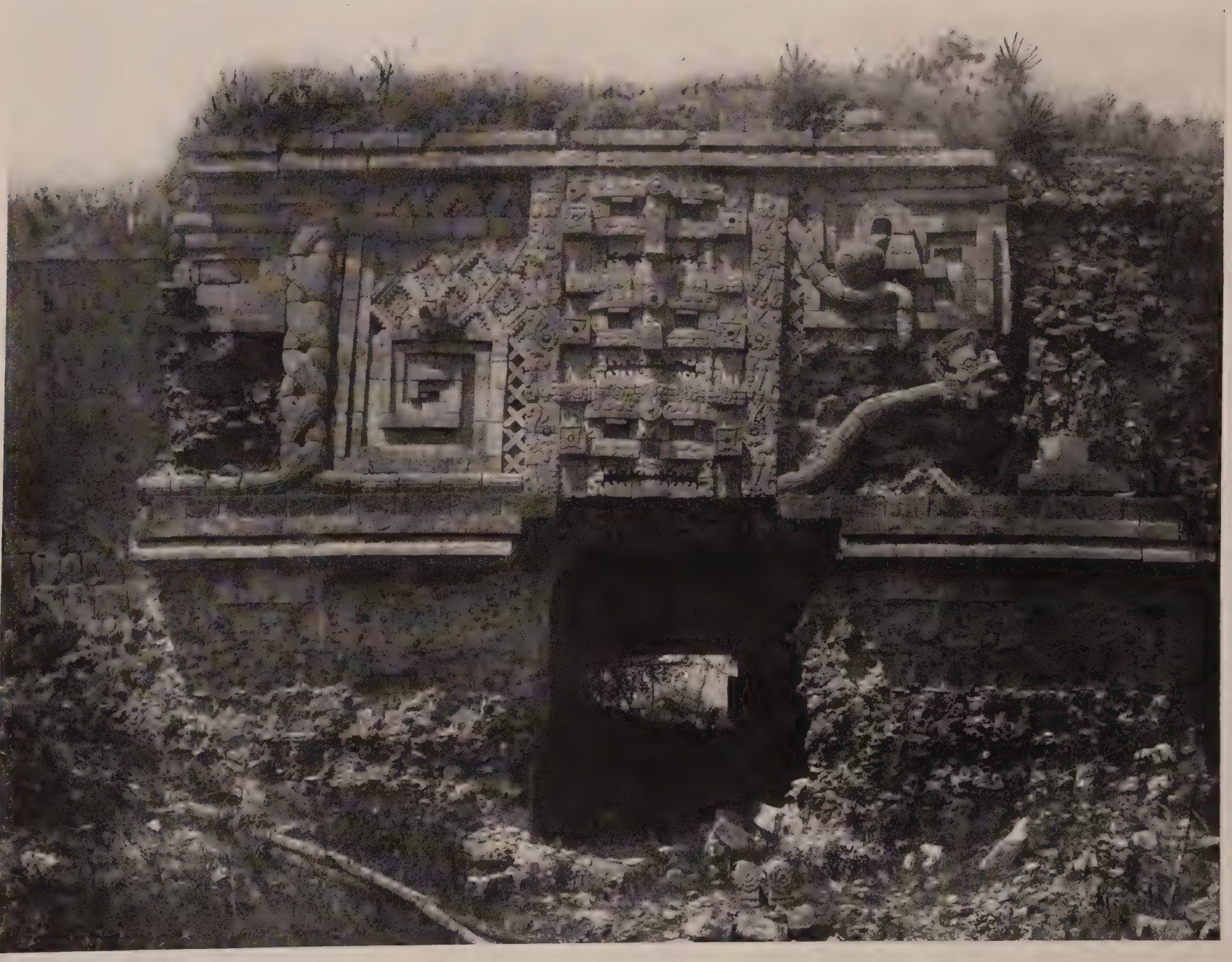
From drawing by de Waldeck. 2.

DETAIL WESTERN FACADE, EAST RANGE, NUNNERY QUADRANGLE,
UXMAL.

Note: There is a feeling of doubt among certain archaeologists as to the accuracy of de Waldeck's drawings. In this connection it is interesting to compare the above with the photograph of the same subject on the preceding page taken nearly a century later by Maler.

Totten.

DETAIL OF THE GREAT SERPENT.



Totten.

EASTERN FACADE, WEST RANGE, NUNNERY QUADRANGLE

NOTE THE COLOSSAL INTERTWINING SERPENT.

UXMAL.

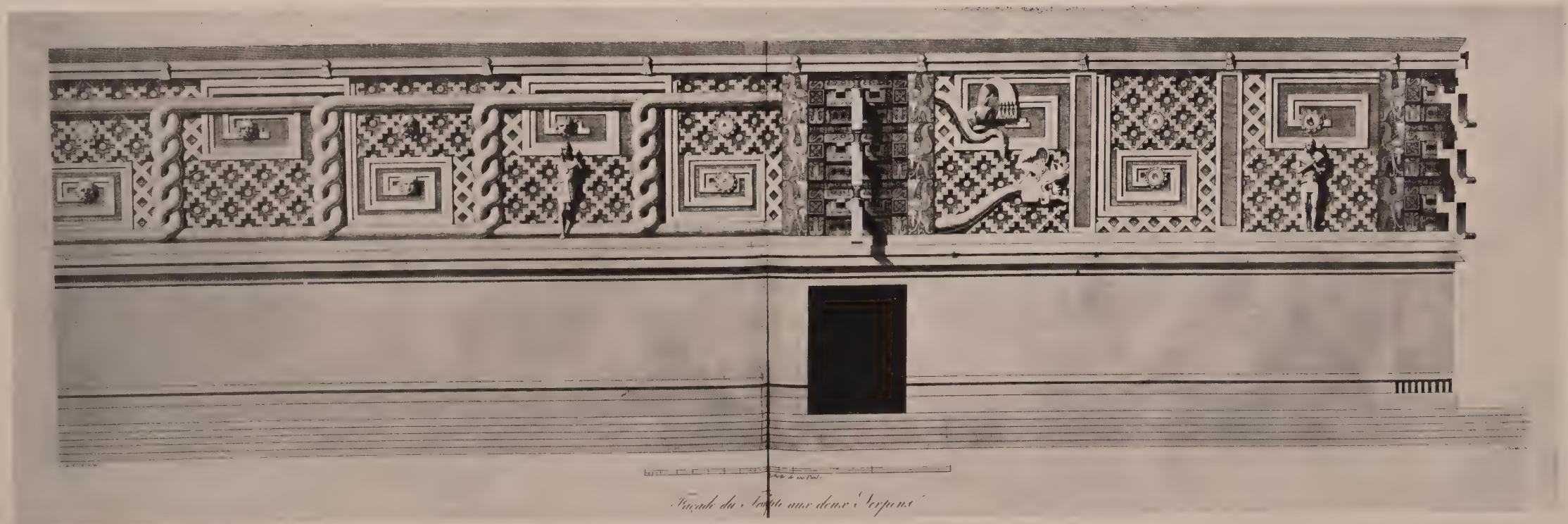
1.

2.

3.

4.

MASKS AND FACES ON THE FACADE SHOWN BELOW
By De Waldeck.



5.

RESTORATION DRAWING, EASTERN FACADE, WEST RANGE, OF NUNNERY QUADRANGLE.
By De Waldeck.
UXMAL.

Totten. 1.

Totten. 2.

MAYA QUOINS OR CORNER MASKS.
NORTH RANGE, NUNNERY QUADRANGLE,
UXMAL.

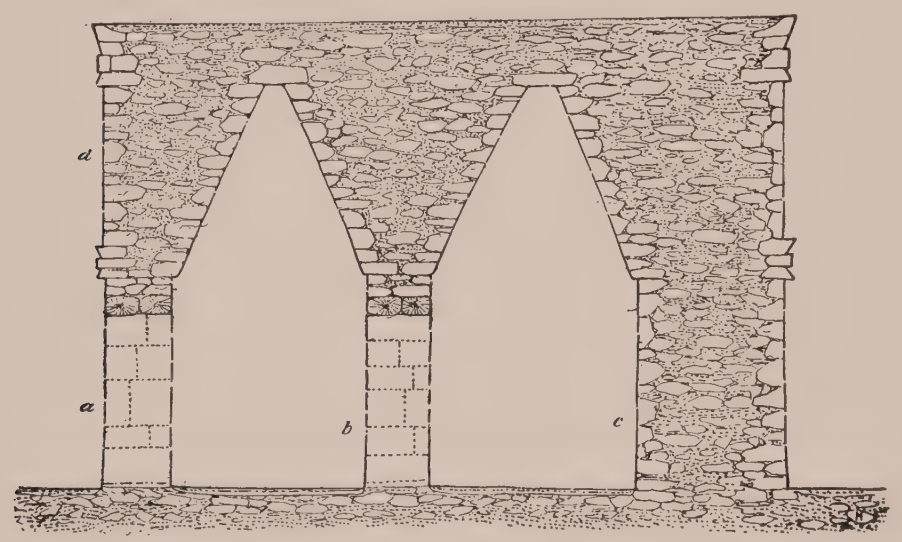
PALACE OF THE GOVERNOR, UXMAL.

The Most Remarkable Palace in America.

THIS beautiful building, probably the princely residence of the Tutul Xiu family, is the finest single Maya building extant.

It was erected about 1200 A. D. The plan shows it to be a rectangular structure, 325 feet long, 39 feet wide, with a height of 25 feet.

The interior arrangement of the Maya palace is so unlike anything we are accustomed to that we naturally regard it as crude and inconvenient, but we must take into account several points wherein the climatic conditions make life in the tropics different from that of the temperate zone. The Mayas, like the ancient Greeks, were an outdoor people, their houses serving primarily as places in which to sleep and to spend the time during inclement weather. The necessity of more complicated domestic arrangements was further obviated by innumerable slaves.



SECTION THROUGH
PALACE OF THE GOVERNOR.
UXMAL.

A surprising feature of their habitations was the utter lack of windows, for there is not, properly speaking, a single window in Maya Architecture. Their arrangement of rooms was usually in suites of two—an outer chamber opening directly out of doors and an inner one directly behind it. The chambers were totally dark, save for the light that came in through the doorway of the outer chamber. The absence of windows is accounted for by the excessive tropical sunshine, where light is not wanted, but where it is a rest to the eyes and the brain to escape from the dazzling sunshine. Furthermore, where great brilliancy of sunshine prevails, a small aperture will admit abundant light to sufficiently illuminate large interiors.

The façade is cleverly divided into three bays by two pointed arches, introduced doubtless to relieve the otherwise excessive length. A contrast of plain and richly decorated wall surface is carried to its highest development,—characteristic of the purest Maya designs. The lower portion of the façade is entirely unornamented save about the doorways while the upper portion is one exuberant mass of detail.

To analyze the façade, we find the usual medial and crowning cornices. The zone between, some 10 feet wide, has a fretwork background, probably inspired by lattice work. Upon this is applied the "mask panel" ornament carried across the façade in festoon fashion, and interspersed throughout the façade is a large fret ornament, while over the central doorway and at intervals along the façade are seated human figures, about life size, wearing enormous and elaborate headdresses.

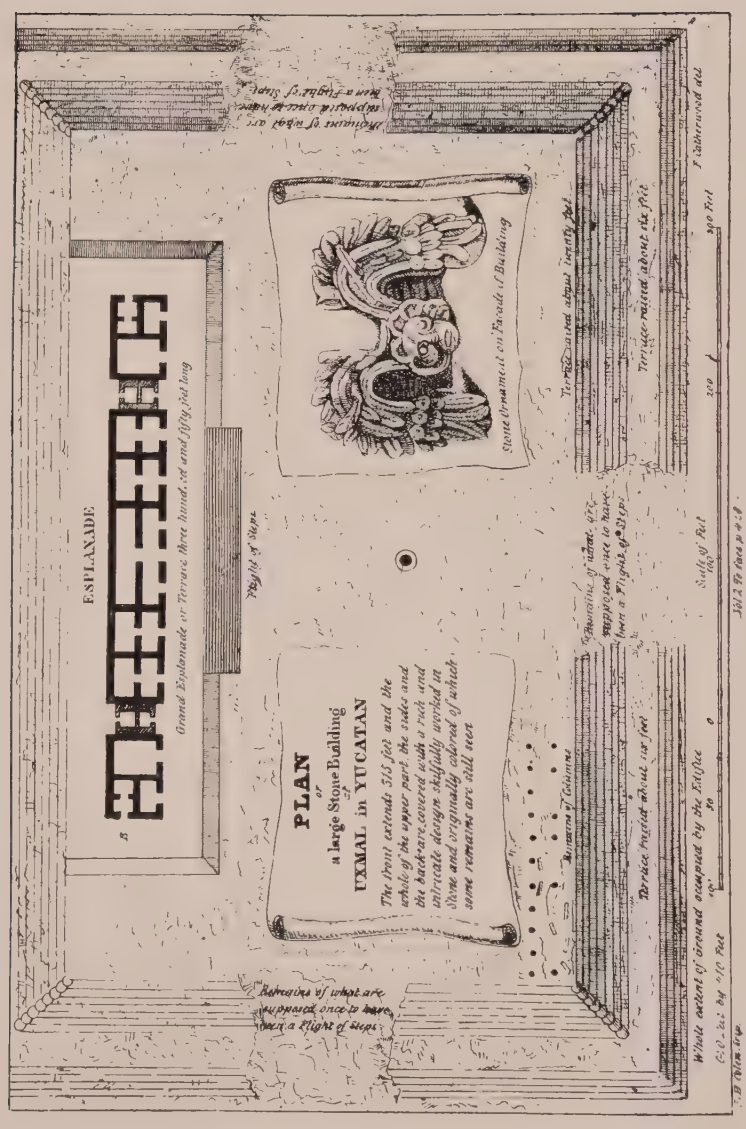
The figure over the central doorway has an additional background of bars terminating in serpents' heads, between which are hieroglyphs.

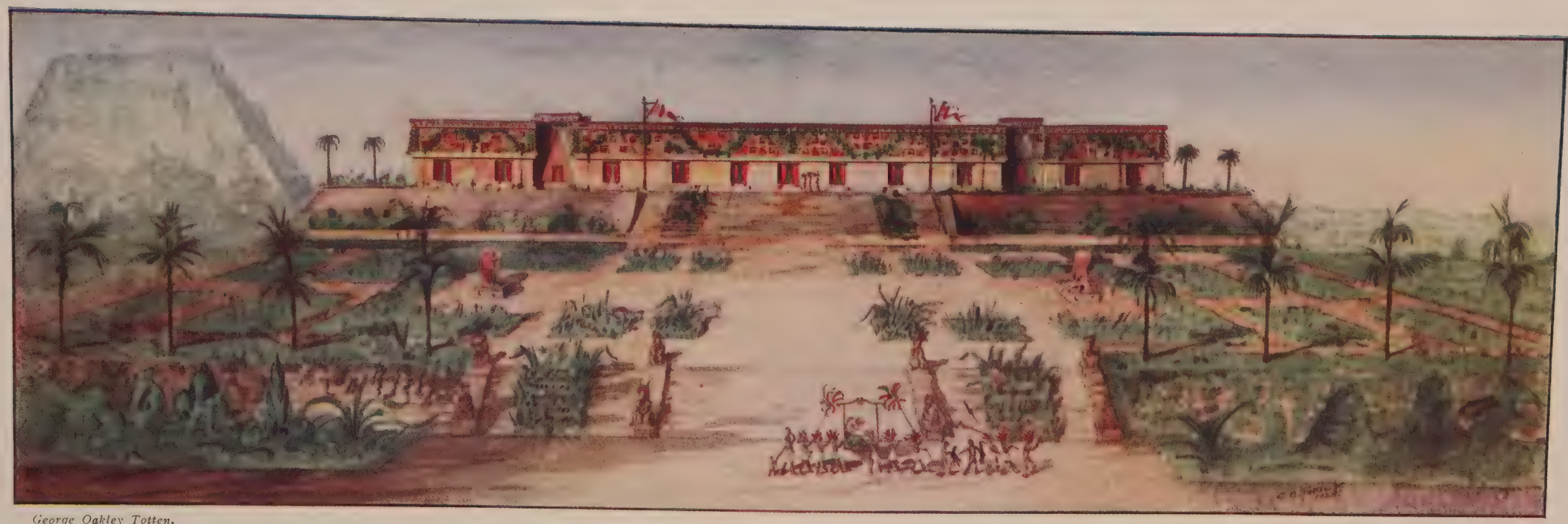
Small squares in rows are also effectively introduced.

Maya architecture developed, as it was, primarily for religious purposes, was full of mysterious symbolism. This was naturally carried to the structures used for other purposes, so we find the decorations of this great palace full of mysterious symbolic ornament, the meaning of which we cannot even surmise.

Architecture should of course be the outgrowth of the needs and customs of a people and should fit the climatic conditions under which it is constructed. The Mayas fulfilled these requirements. It is very noticeable that in countries of intense sunshine, such as Egypt and Greece, the architecture is in strong, bright colors. As we look at a colored plate of Egyptian architecture, for example, with the actual colors of the original, we are inclined to think it crude and barbaric, but in order to understand it we must see the original under its normal conditions of intense sunshine, for the stronger the light the more it eats away the color —so that the plate of glaring color, when seen in its natural surrounding, softens down and becomes beautiful. The Mayas realized this and their architecture is a wonderful achievement of beautiful tones and shades of brilliant color.

The Mayas early in their history had realized the artistic value of terraces—and probably of gardens, so we find this building splendidly elevated. According to Stevens there were three great terraces, the lowest of which is 3 feet high, 15 feet wide, 575 feet long. The second is 20 feet high, 250 feet wide and 545 feet long, and the third 19 feet high, 30 feet broad and 360 feet long. They are all of stone in a fair state of preservation. What an enormous undertaking for a people who relied only on man power!


ESPLANADE
PLAN
of a large Stone Building
at UXMAL in YUCATAN
The front extends 316 feet and the whole of the upper part, the sides and the back are covered with a rich and intricate design skilfully worked in Stone and originally cabreat of which some remains are still seen
Grand Esplanade or Terrace three hundred and fifty feet long
Stone Ornament on Facade of Building
Terrace raised about six feet
Terrace raised about twenty feet
Remains of what are supposed once to have been a Flight of Steps
Remains of Columns
Whole extent of ground occupied by the Edifice
Scale of Feet



George Oakley Totten.

RESTORATION OF THE
PALACE OF THE GOVERNOR.
UXMAL.
YUCATAN.

Totten. 1.

SOUTH BAY.

Totten. 2.

NORTH BAY.

3.

Made under the direction of Dr. W. H. Holmes.
By Delancy Gill.

PALACE OF THE GOVERNOR.
FROM MODEL IN THE NATIONAL MUSEUM, WASHINGTON, D. C.
UXMAL.

1.

2.

PLUMED HEADDRESSES OF SEATED FIGURES OVER DOORWAYS OF PALACE OF THE GOVERNOR.
UXMAL.

These Figures Were Brought from Yucatan by Stephens and Presented to Mr. John Church Cruger. They Were Presented After His Death by His Daughter to the American Museum of Natural History, New York.

3.

Courtesy of Ernest L. Crandall.

PALACE OF THE GOVERNOR.
UXMAL.

From photograph of the model in the National Museum, Washington, D. C.

DETAIL
PALACE OF THE GOVERNOR
UXMAL
YUCATAN

Totten.

So-Called "House of the Turtles" so Named Because of the Use of Turtles as Ornaments of the Cornice.

The Building is 34 by 94 Feet, of Very Simple Design but Excellent Proportions and with Chaste and Simple Ornament; a Portion of this Facade Catherwood Says Fell Between the Years 1839 and 1842.

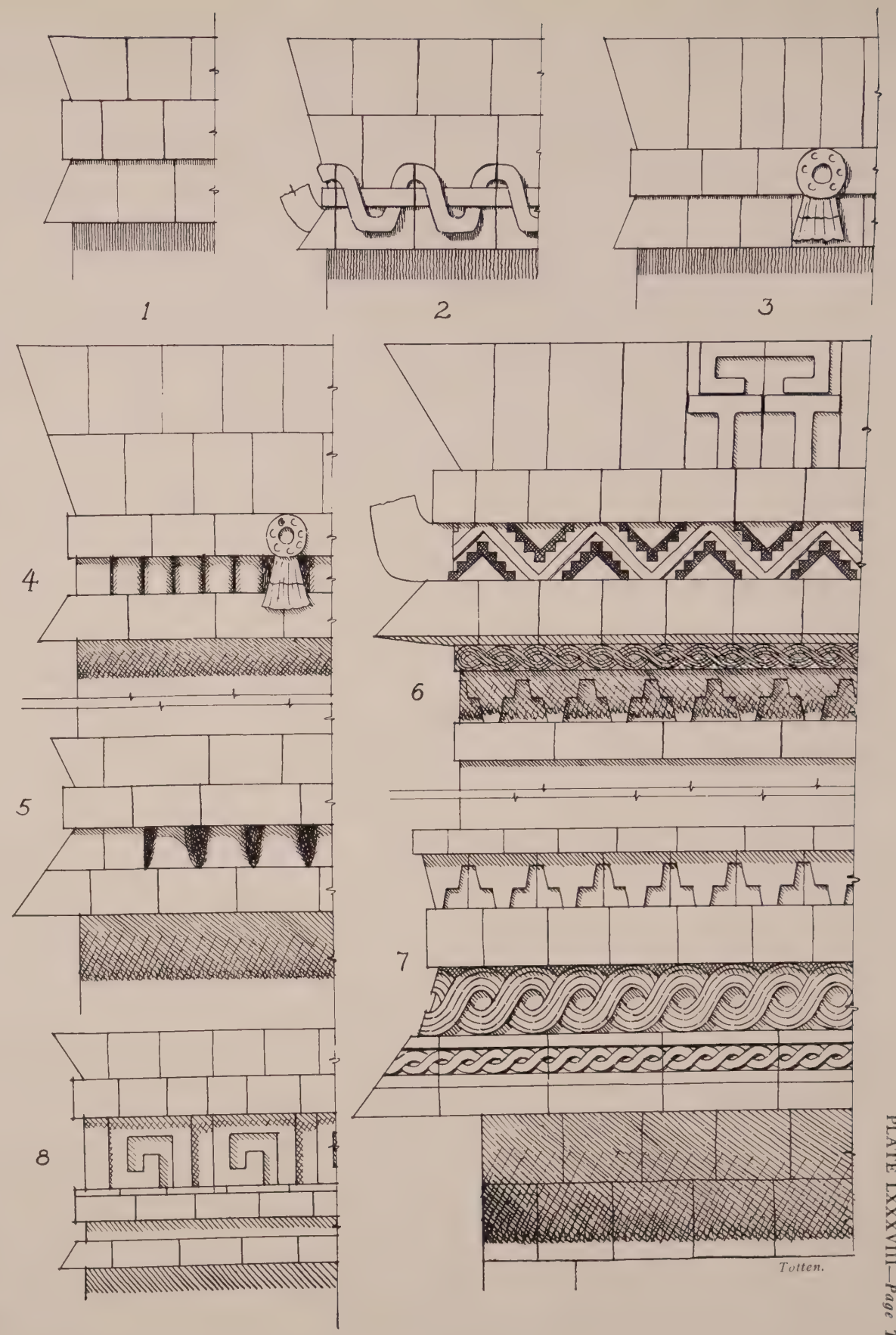
Uxmal.

Totten.

The House of The Pigeons

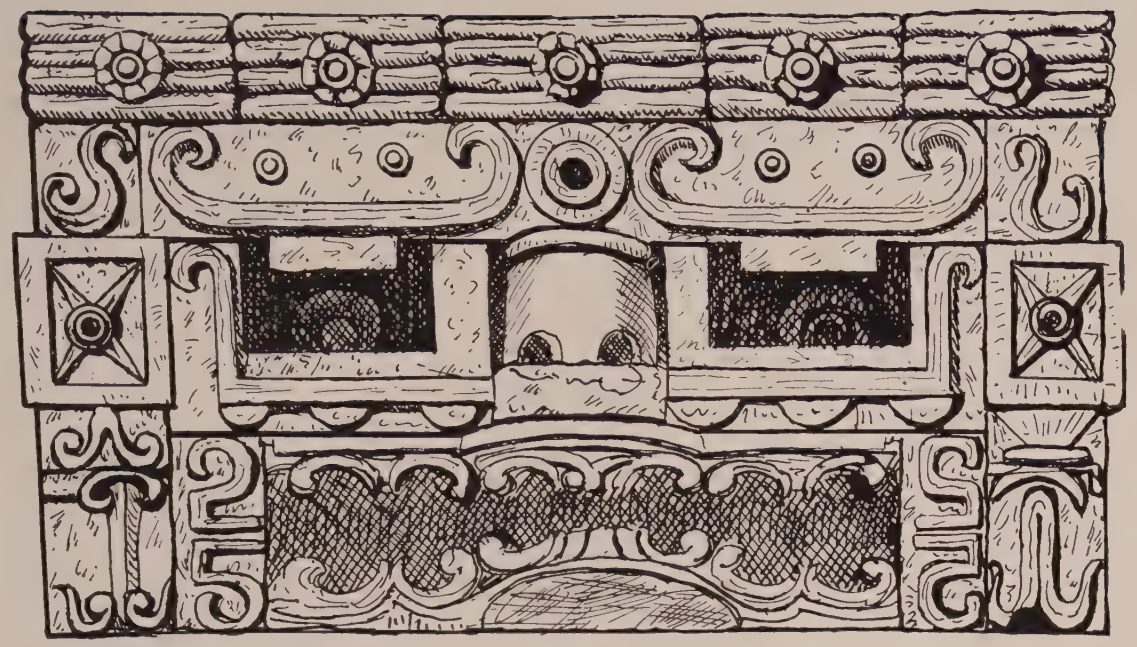
This Building is 240 Feet Long, Composed of a Double Range of Rooms, from the Central Wall of Which Rises a Roof Comb not Unlike the Gables of an Elizabethian House. The Small Oblong Openings Give Somewhat the Appearance of a Pigeon House, Hence its Name.

Uxmal.



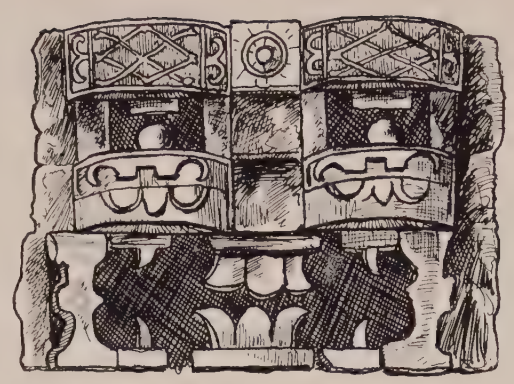
Comparative Study of Maya cornices and Belt Courses.

1—Uxmal—House of the Pigeons.
2—Uxmal—Palace of the Governor
3—Uxmal—Western Range of Nunnery Quadrangle
4, 5—Uxmal—Cornice and Belt Course—Eastern Range of Nunnery Quadrangle.
6, 7—Chichen-Itza—Cornice and Belt Course—Nunnery.
8—The Iglesia (Church)—Belt Course of Flying Facade.



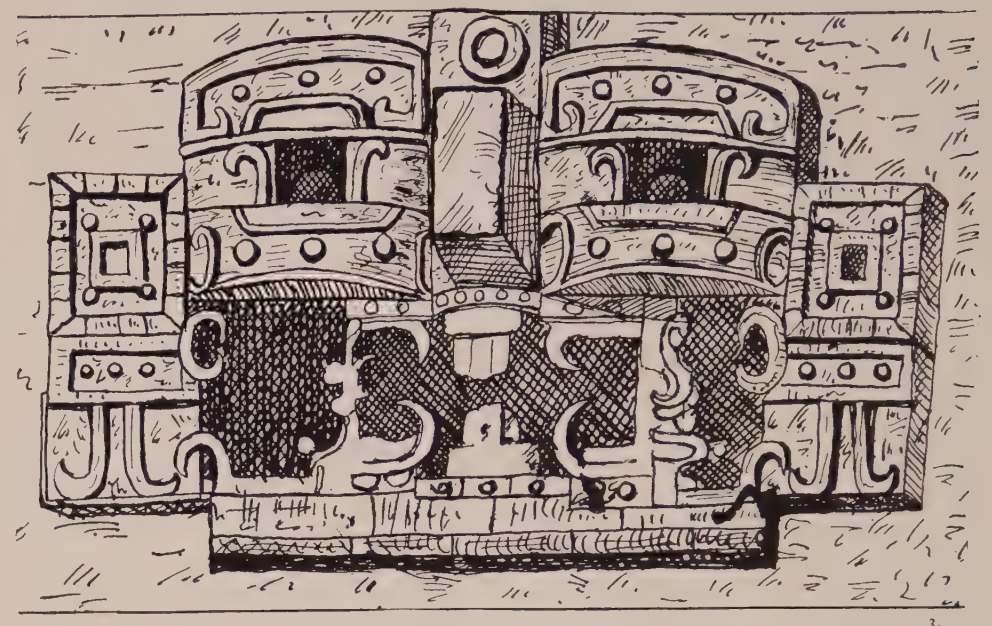
From Mexico, a Traves de los Siglos. 1.

MASK
MONJAS.



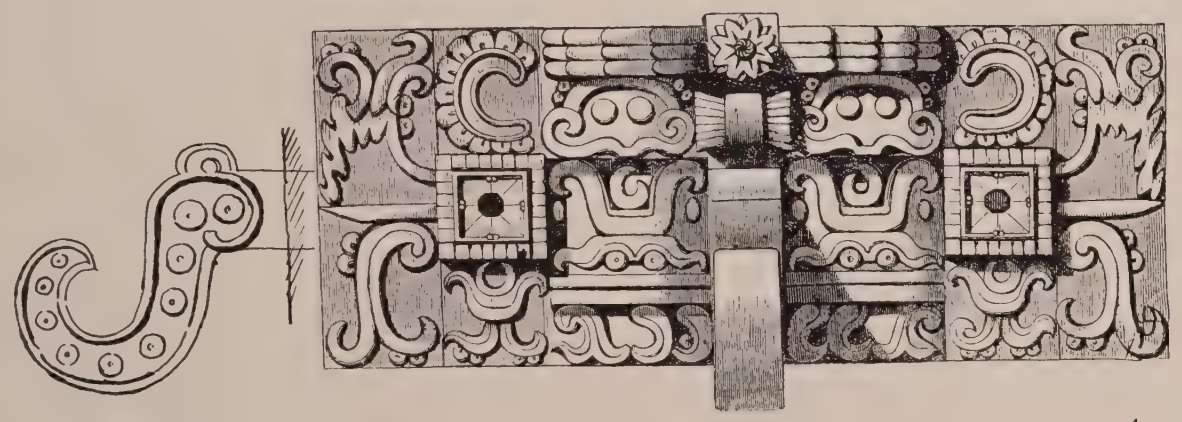
2.

MASK
MONJAS.



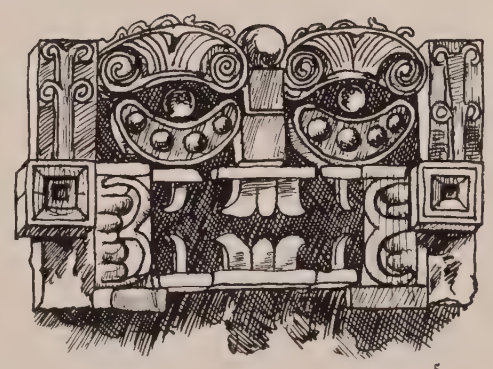
3.

MASK
MONJAS.

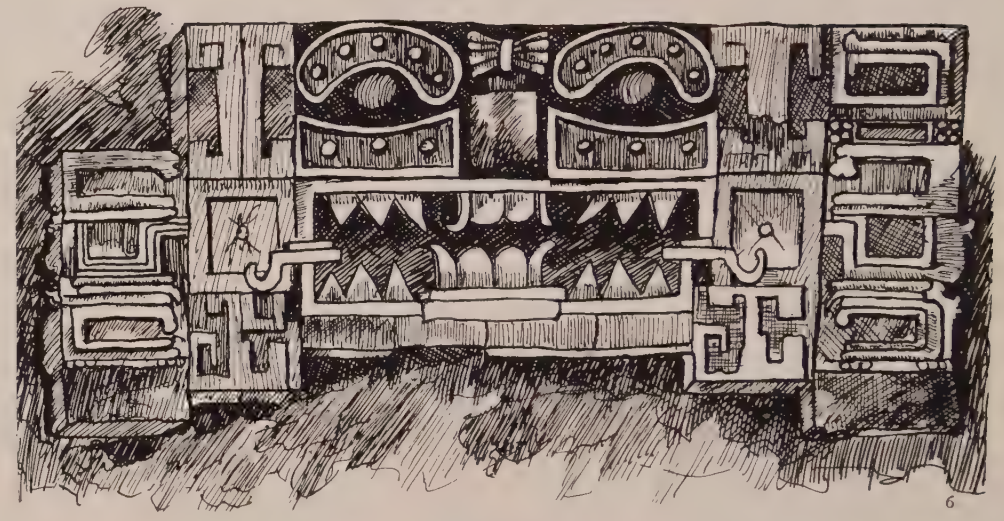


Catherwood. 4

MASK—PALACE OF THE GOVERNOR.



5.



6.

MASK
MONJAS.

STUDY IN MASKS.
UXMAL.

It is just possible that this "mask panel" became, like our flag or eagle, the National Emblem of the Mayas and was used as a decoration on every building of a national character. It is reasonable, too, since the state and church were so closely allied, to suppose that all religious buildings were national and hence decorated with the "mask panel."

DAY.

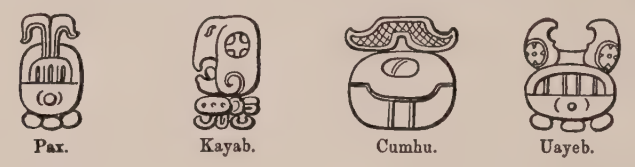
Uinal or Month of 20 Days

Tun or Chronological Year of 18 Uinals

KATUN.
20 Tuns

Baktun or 400 Tuns

MONTH SIGNS.



DAY SIGNS.

Maudsley.

THE ABOVE SIGNS ARE EMPLOYED IN THE INSCRIPTIONS TO DENOTE THE DIFFERENT DAYS AND MONTHS OF THE 365 DAY YEAR.

Courtesy of American Museum of Natural History, New York.

1.

MAYA DRUMS

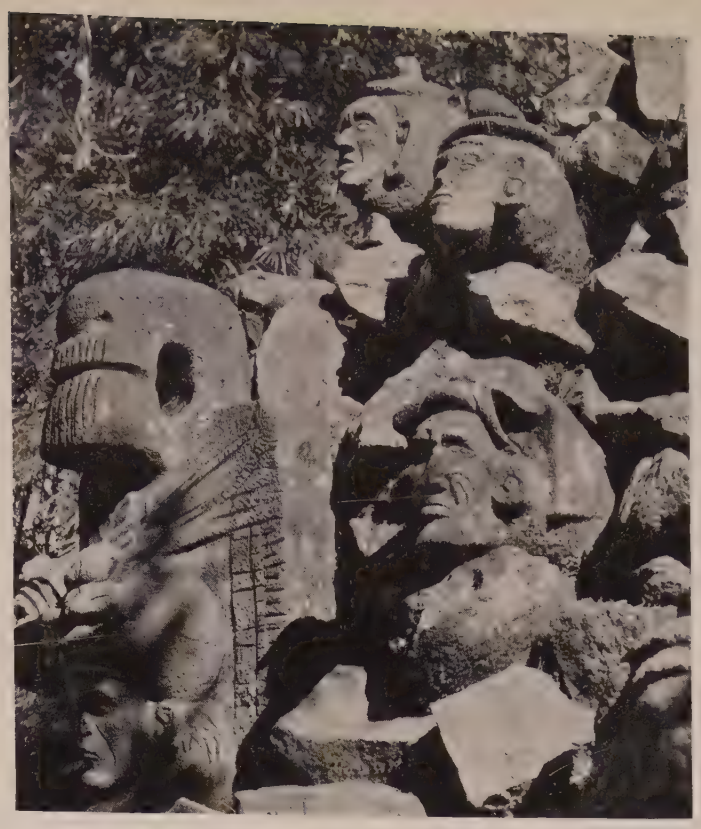
2.

CODEX
In Borgian Museum, College of Propaganda
Rome.

Illustrations from the monumental work *Antiquities of Mexico,*
By Lord Kingsborough, published in London in 1831.

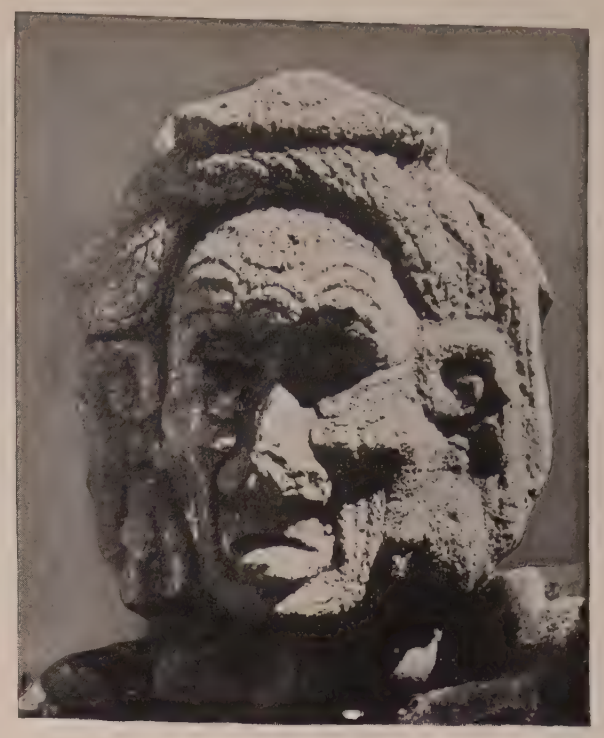
2.

STELA IN THE MAYA STYLE AT PANTALEON.



Courtesy of the Pan-American Union. 1.

GROUP OF SCULPTURE AT PANTALEON.



3.

DETAIL PHOTOGRAPH OF AN OLD MAN AT PANTALEON, GUATEMALA.

UPPER PANEL: DECORATIVE PANEL OVER DOORWAY. OCOSINGO. 4.
LOWER PANEL: WHISTLE AND ORNAMENTS IN COLORED TERRA COTTA

TURQUOISE MASKS. 5.

Hertz Collection 6.

From Drawings by de Waldeck.

SACRIFICIAL KNIFE, HANDLE OF MOSAIC.

Courtesy of the Pan-American Union. 3.

AN AZTEC FIGURE.
"GOD OF THE FLOWERS",
WITH MAYA FEELING.

Courtesy of the American Museum of Natural History, New York. 1.

HEAD OF DIORITE, FROM THE VALLEY OF MEXICO.

Courtesy of the American Museum of Natural History, New York. 2.

MASK FROM WESTERN FACADE OF THE EAST RANGE,
NUNNERY QUADRANGLE,
UXMAL.
IN IMITATION OF TURQUOISE MOSAIC, PROBABLY
INTENDED TO REPRESENT SUN GOD.

4.

HUITZILIPOCHTLI, AZTEC GOD OF WAR.

MITLA

ALTHOUGH THE architecture of Mitla is not Mayan, it is interesting as illustrating another pre-Columbian style, and by way of comparison with it a few examples are shown.

The ruins are probably the best known of any of the ancient Americas. This is partly due to their accessibility as they are located but 30 miles from Oaxaca, and partly because they are the best preserved buildings of the Highlands of Mexico.

Mitla was the burying grounds of the Zapotican Kings and is thought to have been a place of pilgrimage in ancient times.

Although a later style than the Maya it seems to show but little influence except in the plans of the palaces. These have a resemblance to those of Tikal and other Maya cities. They are usually square, with a court yard in the center, or consist of four rectangular buildings forming a court, as the quadrangle at Uxmal.

The walls are heavy and are faced with cut stone and filled with concrete or rubble. Developed under confined and isolated conditions it is a style unto itself. Its chief characteristics are the predominance of horizontal lines and the peculiar wall treatments in finely cut stone of small pieces like a Mosaic but of a design inspired by patterns of the weaver's art. The delicacy of the stone work is partly due to the wonderful qualities of the material, which is a soft yet tough and durable trachyte. Many of the stones are but a few inches in length and breadth. The interior rooms are long and narrow and the roofs flat. The doorways are broad and low. The exteriors were washed with a thin coat of plaster, colored red.

There are traces of frescoes in red and black upon a white base. These represent ceremonial processions and resemble the pictographic art of the Codices.

Cruciform tombs have been found under several of the temples, the inside walls of which are carved in woven patterns similar to the exterior of the temples.

Bancroft[1] has reviewed the literature of the site, and Bandelier[2] has written of the people and has published measured drawings of the buildings, and Charney[3] has taken a series of superb photographs, while Dr. W. H. Holmes has written of the people and the architecture.[4]

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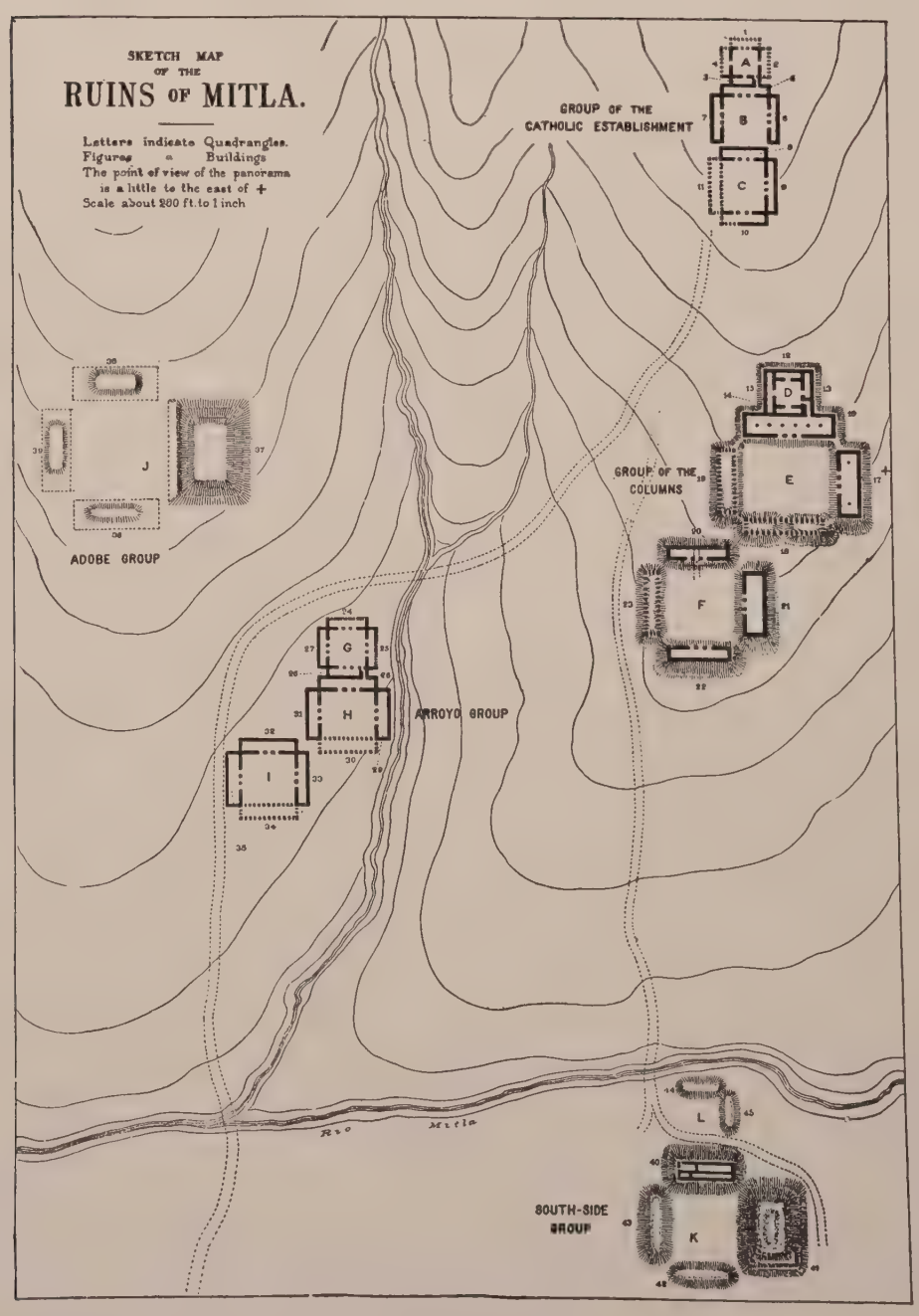
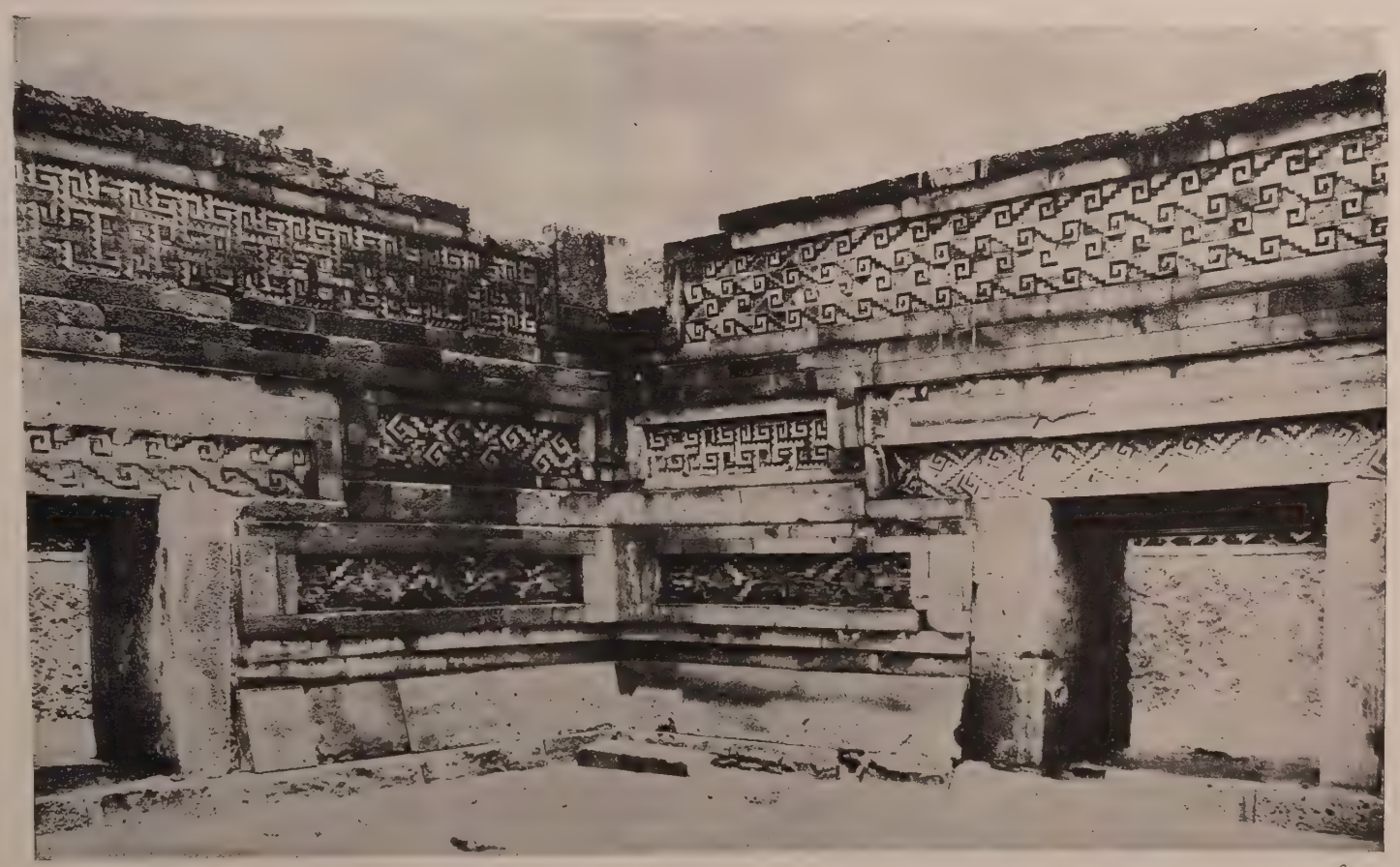
[1] Native Races—Vol. 4.
[2] Archæological Reconnoissance into Mexico.
[3] Ancient Cities of America.
[4] Ancient Cities of Mexico.



1.

AUDIENCE ROOM.
PALACE OF THE COLUMNS.



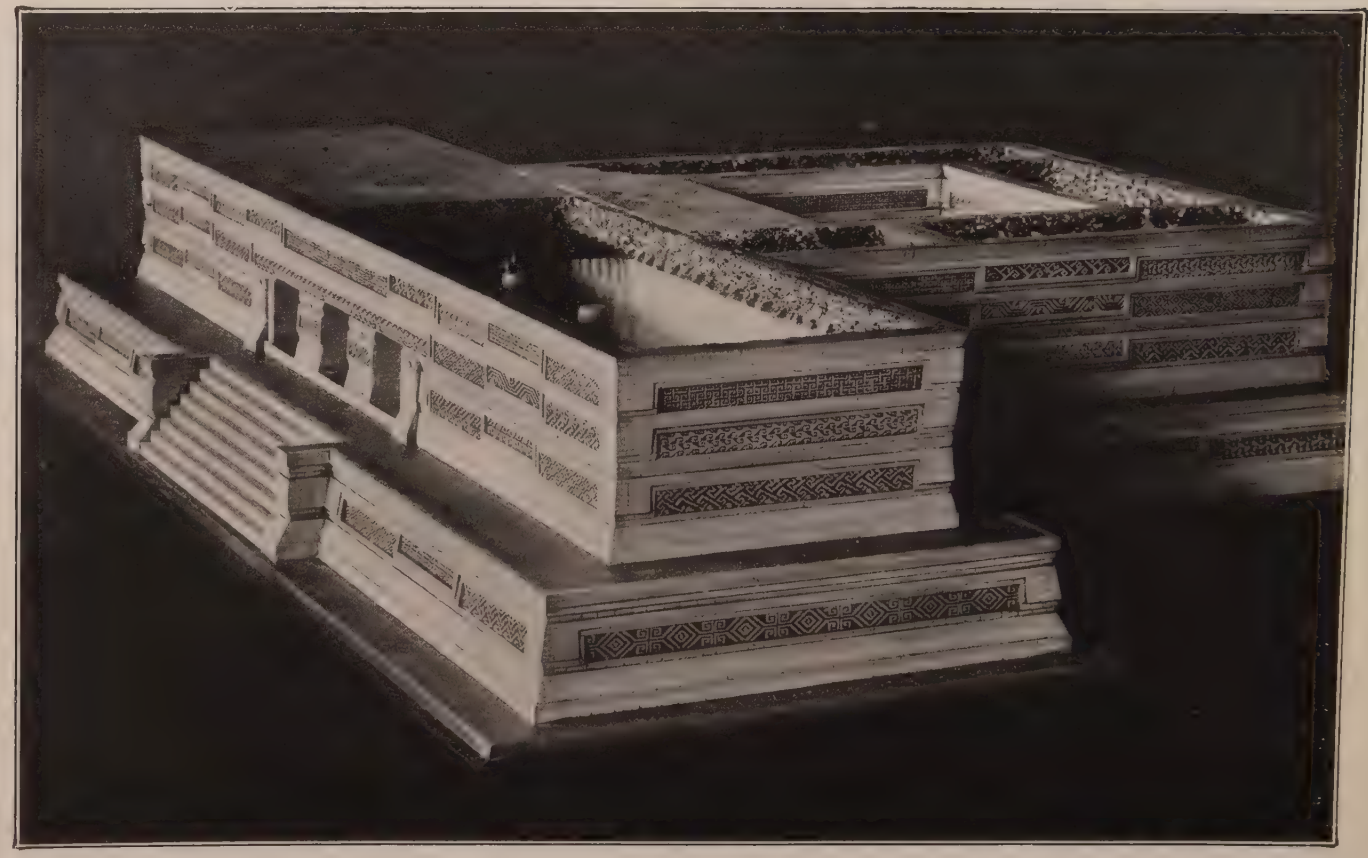
2.

PATIO.
PALACE OF THE COLUMNS.

3.

Waite.
Courtesy of the Pan-American Union.

MITLA.



4.

PALACE OF THE COLUMNS.
MODEL IN THE NATIONAL MUSEUM.
WASHINGTON, D. C.

HOUSE OF THE FLOWERS—XOCHICALCO

NEAR CUERNAVACA.

This is perhaps the most beautiful example of Toltec architecture that has come down to us. As we have seen, the later Maya work at Chichen Itza was strongly influenced by the Toltecs, so, too, a reciprocal and refining influence was exerted by the Mayas.

The plan of the House of the Flowers is almost identical to that of the Temple of the Tigers at Chichen Itza.

It stands on a low mound richly decorated with sculpture of great plumed serpents, seated human figures, hieroglyphs, etc.

The mound has been carefully restored.

The great serpents bring to mind those of the stylobate of the Mausoleum at Halicarnassus.

1.

STYLOBATE
"HOUSE OF THE FLOWERS."
XOCHICALCO.

2.

"HOUSE OF THE FLOWERS," RESTORED.
XOCHICALCO.

Model made under the direction of Dr. W. H. Holmes, National Museum, Washington, D. C.

TULUUM

THIS IS the largest and most important Maya city on the east coast of Yucatan. It may have been a colony or trading post during the Old Empire, for a stela, dating 9. 13. 10. 00. 7 Ahan 3 Cumber, 442 A. D., was found here. But the city was not developed, as we see the ruins, until a late date, and probably by refugees from Mayapan.

The Maya cities, it will be seen from a glance at the map, were well inland. This was at least partly due to their being an agricultural people, and perhaps as a defensive precaution.

The Mayas, and other aboriginal nations of Central America, had no transportation facilities. Beasts of burden were unknown; although the Mayas were surrounded by less civilized and more warlike nations, these could not besiege them in great numbers. Invading armies of any size must carry their provisions with them. Transportation is a necessity. Without mechanical facilities, or beasts of burden, an army cannot leave its base of supplies. Interior Maya towns were safe from attacks of armies of any magnitude. Further, none of these towns are walled, nor had they any apparent means of defense.

Coastal towns, on the other hand, were subject to attacks of flotillas of canoes. This doubtless accounts for the great wall surrounding Tuluum.

There are two general types of buildings here, as is usual in Maya architecture: Temples and the so-called Palaces.

The temples were erected upon terraces, not upon pyramids as in other Maya cities. They are small, containing one or two rooms, with an altar against the rear wall.

The palaces are simpler, too, and usually contain but two long rooms. As S. K. Lothrop * has observed, the Tuluum palace resembles the temples of Palenque.

Stucco was largely used here, and there are many examples of well preserved color. The grouping of the buildings and great plazas, with the sea beyond, made Tuluum, in spite of its somewhat decadent style, a place of great beauty.

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*Tuluum. An archaeological study of the East Coast of Yucutan. Published by the Carnegie Institution of Washington, D. C.

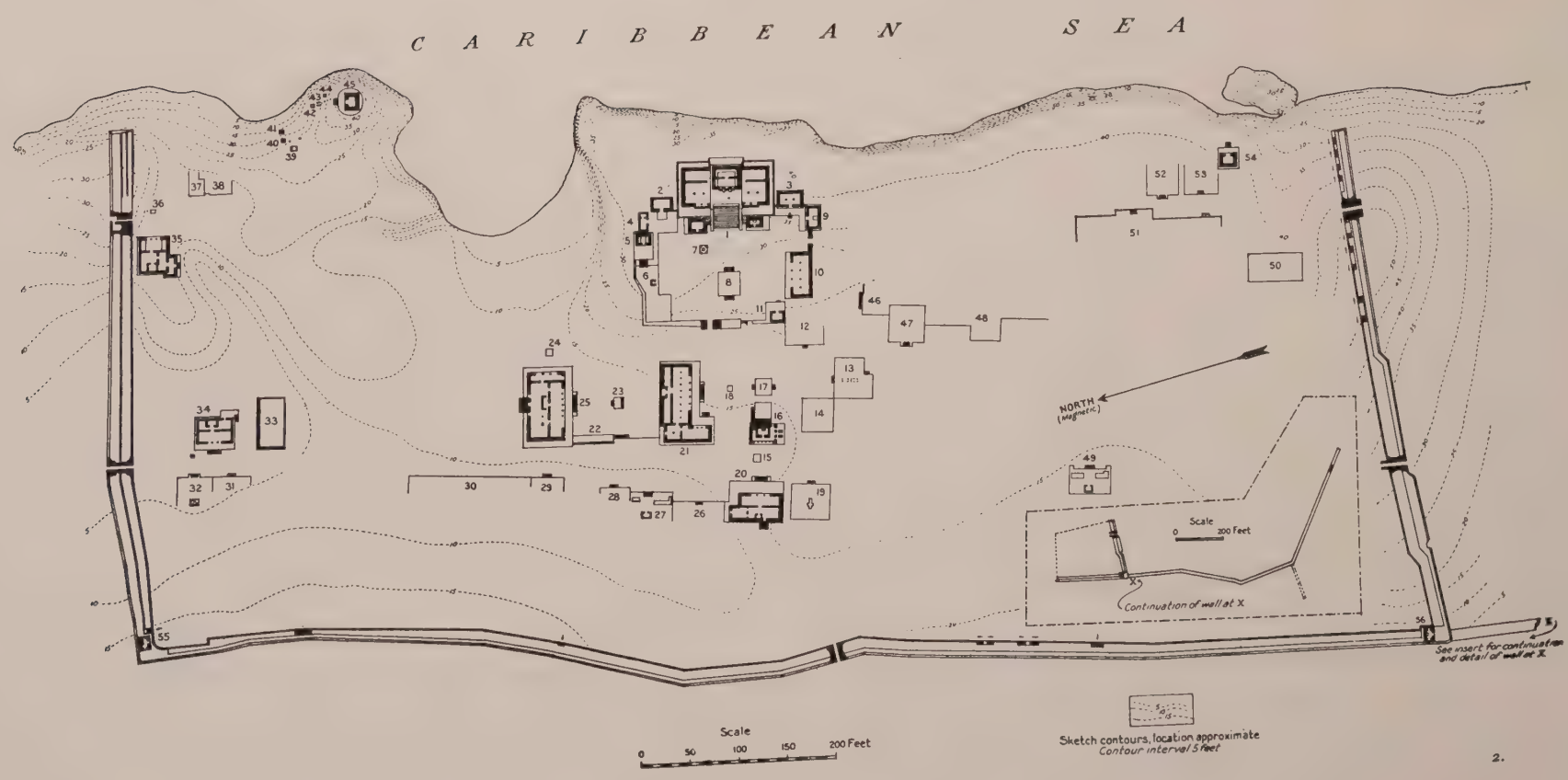
An expedition in charge of Gregory Mason and Dr. Herbert J. Spinden has just been seen sent out by the Peabody Museum of Harvard University to explore the Eastern Coast of Yucatan. January, 1926.

1.

Courtesy of the Carnegie Institution

TULUUM

Restoration by S. K. Lothrop.


C A R I B B E A N S E A
NORTH (Magnetic)
Scale
0 50 100 150 200 Feet
Scale
0 200 Feet
Continuation of wall at X
See insert for continuation and detail of wall at X
Sketch contours, location approximate
Contour interval 5 Feet

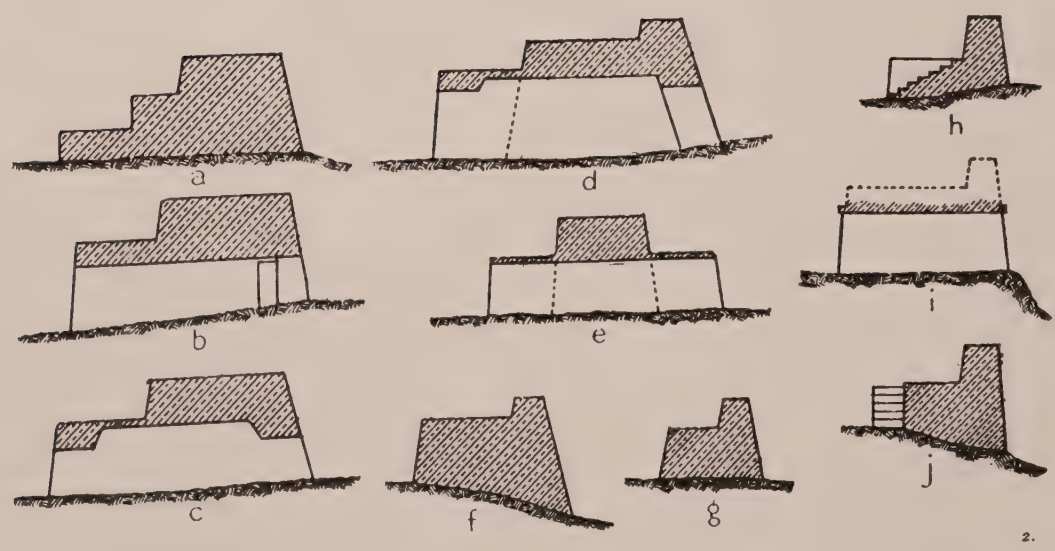
2.

Lothrop.
Courtesy of the Carnegie Institution.

PLAN OF TULUUM.

Courtesy of the Carnegie Institution 1.

SHOWING WALLS OF CITY.



Courtesy of the Carnegie Institution 2.

VARIOUS CROSS SECTIONS OF THE WALL.
a-c North Wall; *d-e* South Wall; *f-j* West Wall.

TULUUM
ONE OF THE FEW WALLED MAYA CITIES.

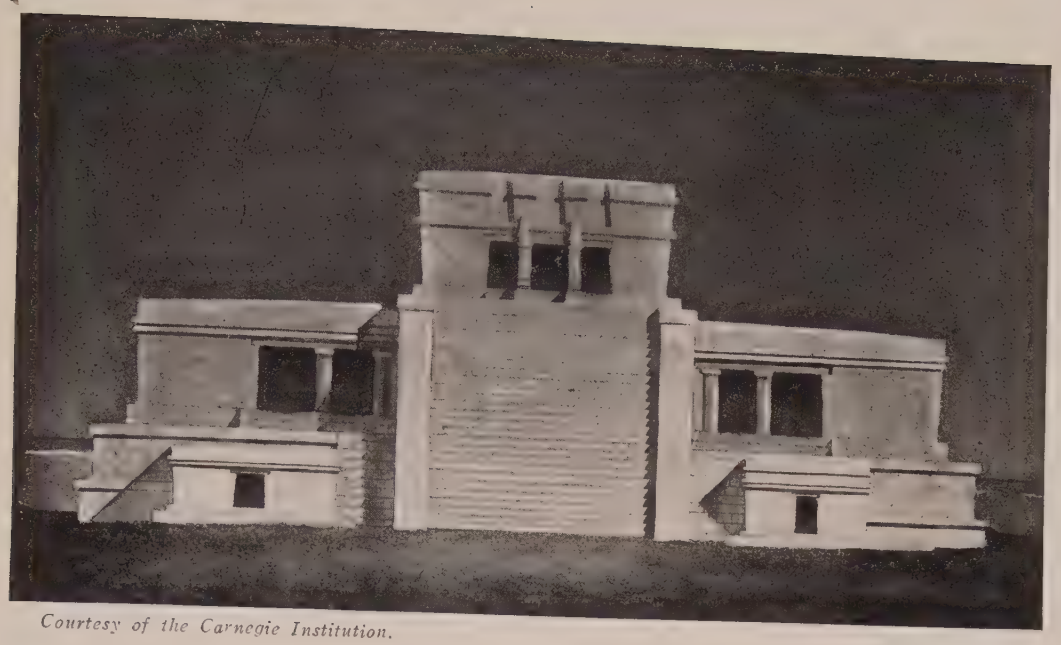
THE CASTILLO

TULUUM

The largest and most important building is the Castillo. It was doubtless used for religious ceremonies. The building including the wings measures at its base 100 feet in length. The grand staircase 24 feet wide with 24 steps and a substantial parapet on each side, still in good preservation, gives it an unusually impressive character. The main entrance contains two serpent columns with square recesses above them which once contained ornaments and in the center ones fragments of statues still remain. The interior is divided into two corridors each 26 feet long. The one in front is 6 feet 6 inches wide and has at each end a stone bench. A single doorway leads to the back corridor which is 9 feet wide and has a stone bench extending along the foot of the wall. On each side of the doorway are stone rings intended for the support of the door and in the back wall are oblong openings which admit breezes from the sea. Both apartments have the usual triangular arched ceiling. The wings are much lower than the principal building and are two stories in height. They contain two chambers 24 feet long and 20 feet wide and with two columns in the center of each chamber. The columns are ornamented in stucco. There is every indication that the roofs were flat which belief was verified by the discovery of wooden roofs still entire in the adjoining buildings.

TEMPLE

It stands on a terrace 6 feet high with a staircase in the center. The front of the building measures 25 feet by a depth of 26 feet.

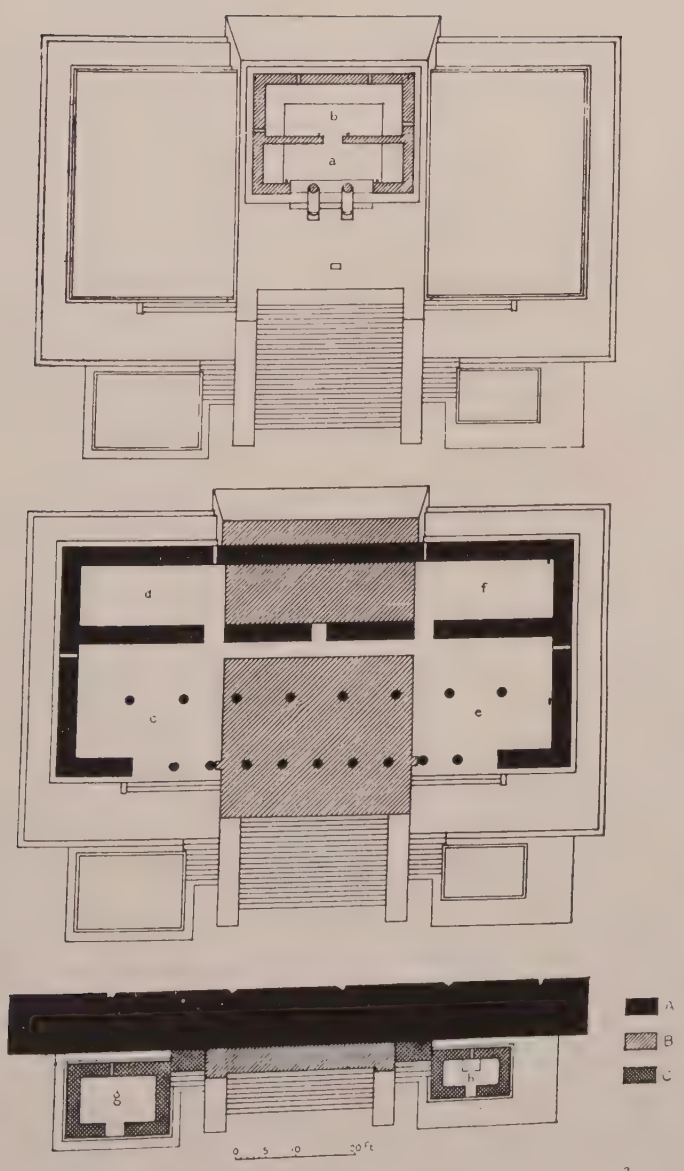


Courtesy of the Carnegie Institution. 1.

RESTORATION OF EL CASTILLO

Courtesy of R. R. Bennett. 3.

SMALL BUILDING NORTH OF TULUUM



Courtesy of the Carnegie Institution. 2.

PLAN OF THREE LEVELS OF THE CASTILLO.

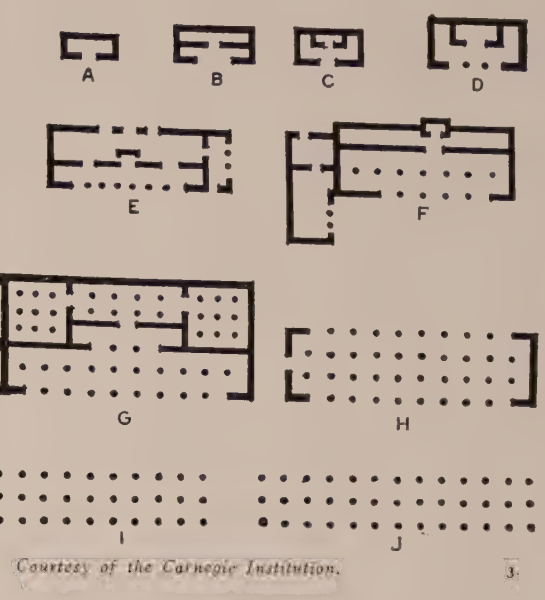
Courtesy of R. R. Bennett. 4.

PRESENT CONDITION OF EL CASTILLO

TULUUM

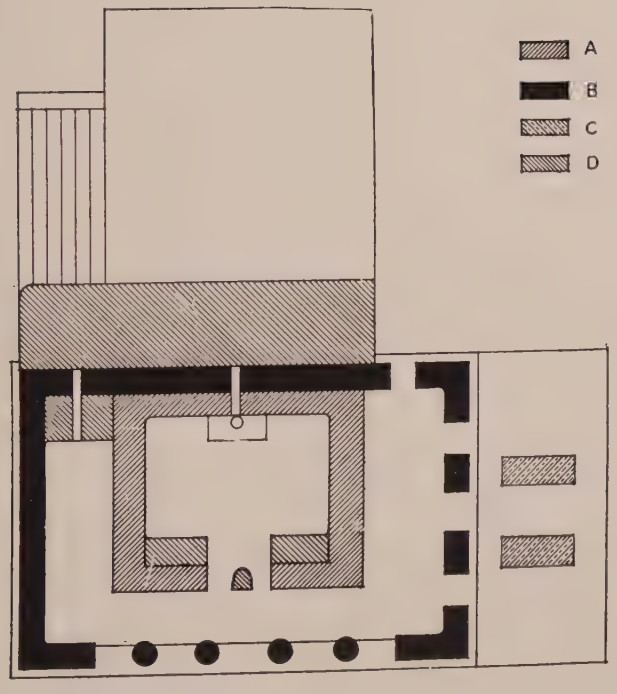
Courtesy of the Carnegie Institution 1.

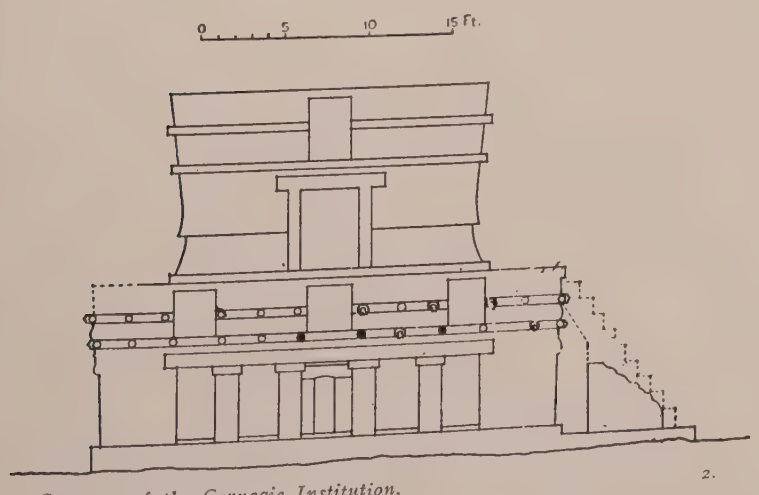
TEMPLE OF THE FRESCOES.
TULUUM



Courtesy of the Carnegie Institution. 3.

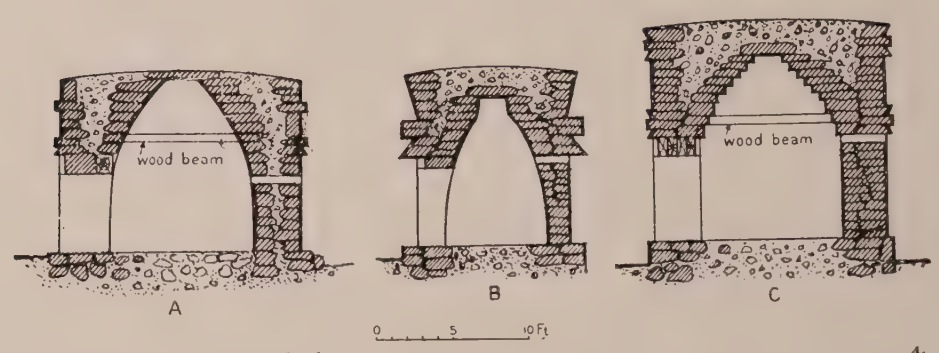
GROUND PLANS, A, B, E, F, TULUUM
C—Plaza Carmen; D—Tuluum Plaza;
G—Chichen Itza; H—Chacmool;
I—Cancuen; J—Aké.





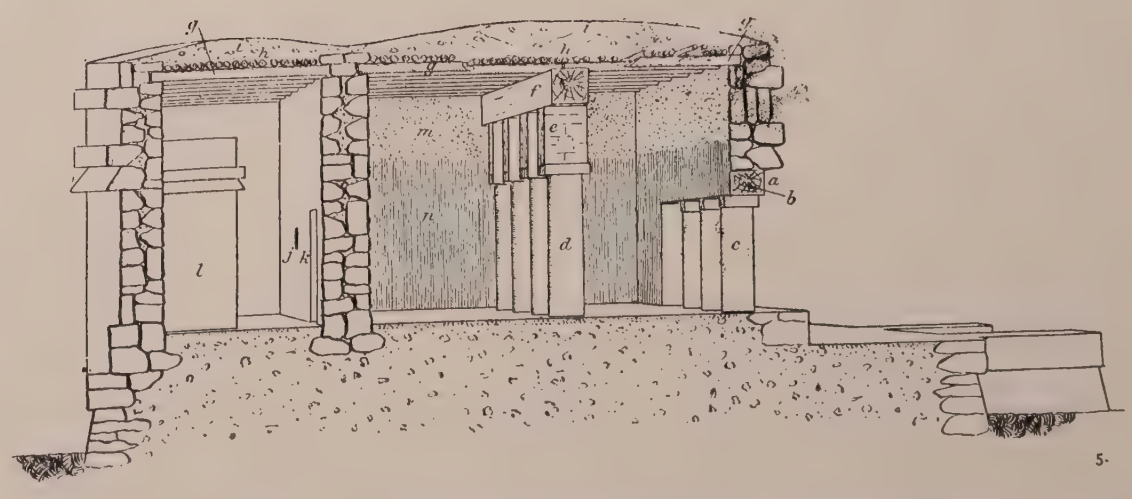
Courtesy of the Carnegie Institution. 2.

FIRST FLOOR PLAN AND ELEVATION
TEMPLE OF THE FRESCOES.
TULUUM



Courtesy of the Carnegie Institution 4.

CROSS SECTION OF STRUCTURE 21. TULUUM (Restored.)
A. Curved Sides; *B*. Bottle Shape; *C*. Overstepping.



5.

CROSS SECTION OF STRUCTURE 21. TULUUM (Restored.)

THE WELL-KNOWN buildings and grounds of the Pan-American Union in Washington contain perhaps the first examples of Maya architecture used in the United States. In this problem, the Architects, Messrs. Kelsey and Cret, had to interpret the various civilizations of the Americas, emphasizing the aboriginal art of Pre-Columbian days.

In the patio of the main building, which as a whole stands for Spanish America, the floor and the fountain are distinctly aboriginal, while the great wall under the loggia of the Annex is embellished with an interesting frieze in the Maya manner, carried out in colored terra cotta. At the end of the long pool in the garden is a curious and attractive seated figure adapted from a stone statue found in Mexico which, although Aztec in style, is Maya in feeling.

Mr. Kelsey made two journeys to Yucatan to study the Maya style, and in a garden fountain for an estate at Chestnut Hill, Philadelphia, he has carried out a grille in tints of jade (the most precious stone known to the ancient Mayas) in which the pattern is formed of crowned feathered serpents, while the dominant unit, front and back, also reproduces famous Maya forms—in one case, the long-nosed god and in the other, the well-known jaguar, with the quetzal bird feathers for eye-brows.

1.

AZTEC FIGURE AT END OF REFLECTION POOL IN THE BEAUTIFUL GARDEN.

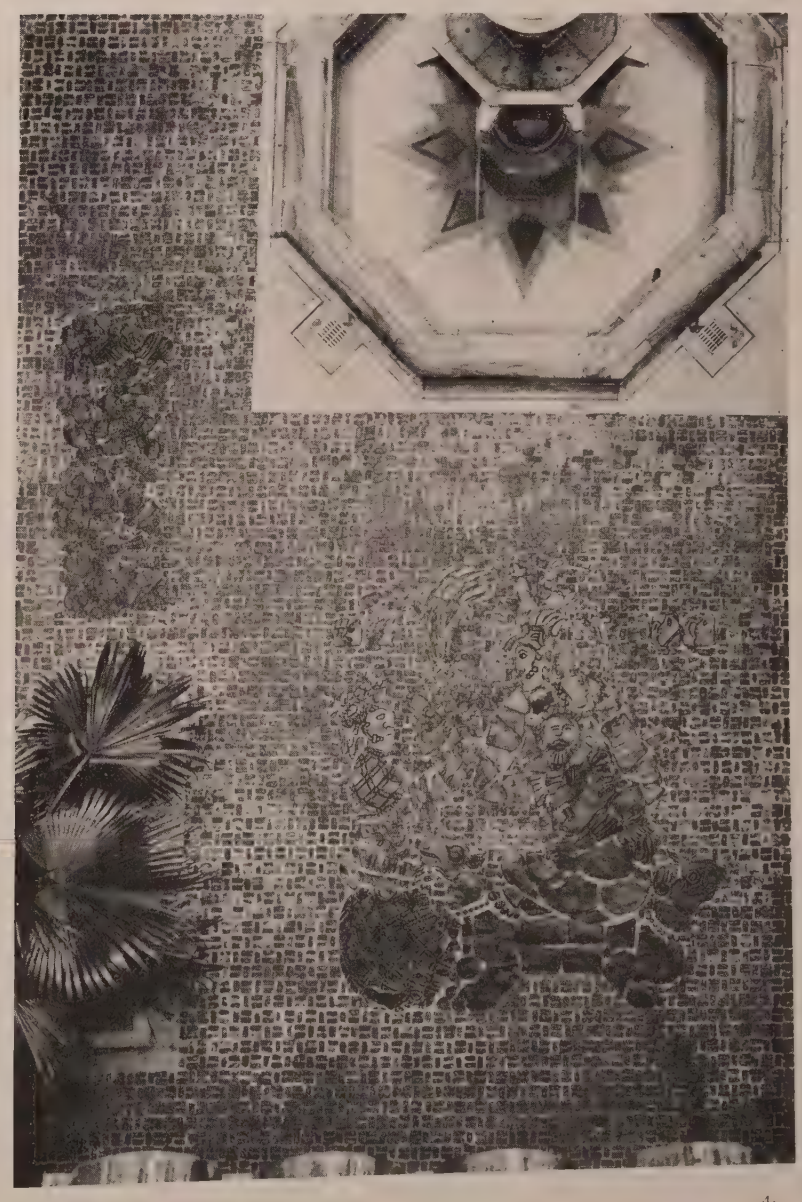
2.

LOGGIA OF ANNEX.

WALLS IN COLORED TERRA COTTA. THE FRIEZE IS AN INTERESTING ADAPTATION OF THE MAYA STYLE OF NORTHERN YUCATAN.

3.

MAYA, AZTEC AND ZAPOTECAN FOUNTAIN REPRESENTING THREE PHASES OF ABORIGINAL ART IN MEXICO AND CENTRAL AMERICA.



4.

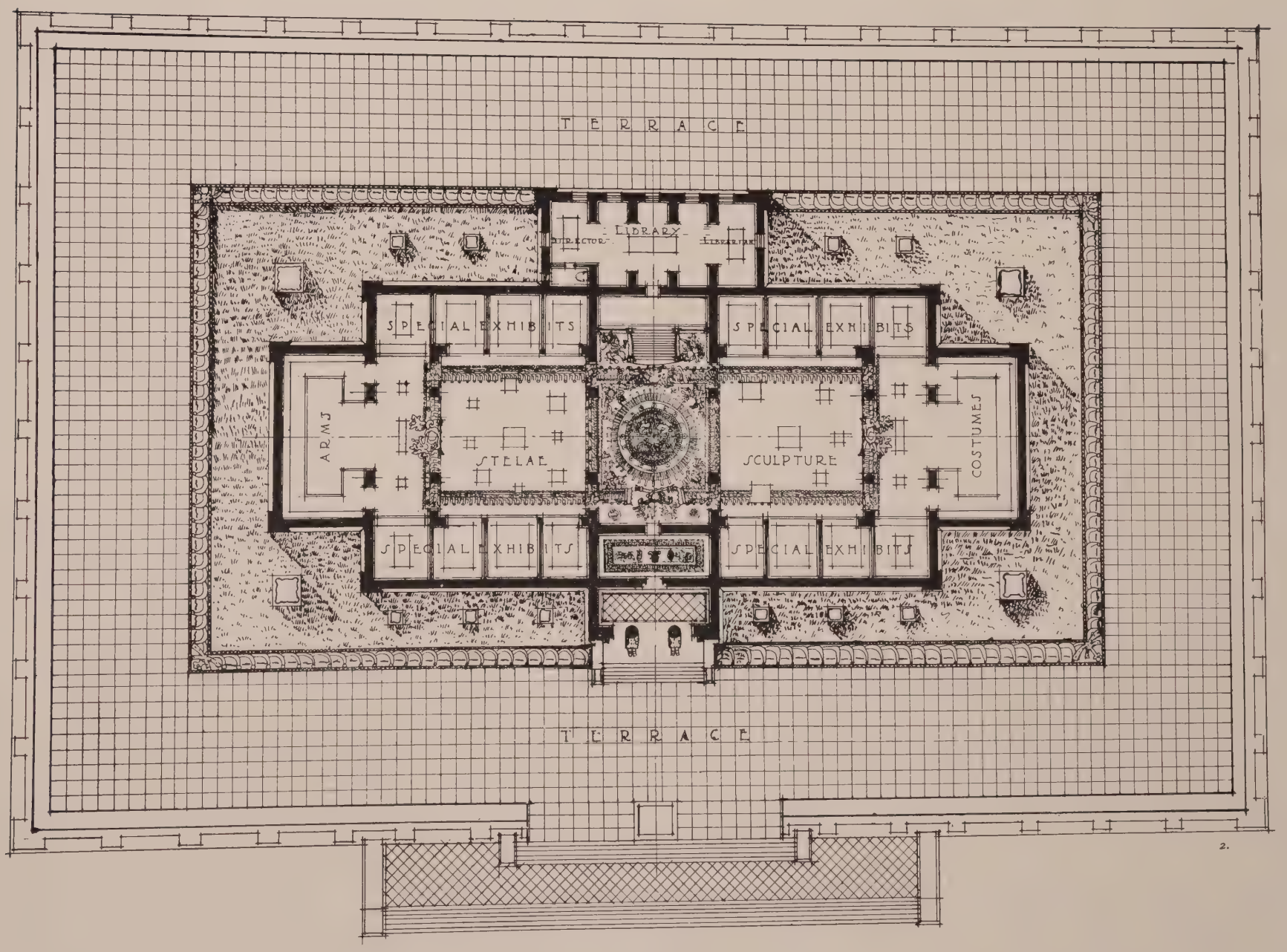
TILE FLOOR, SHOWING USE OF MAYA FIGURES.

PATIO

PAN-AMERICAN UNION BUILDING, WASHINGTON, D. C.

1.

ELEVATION.



2.

PLAN.

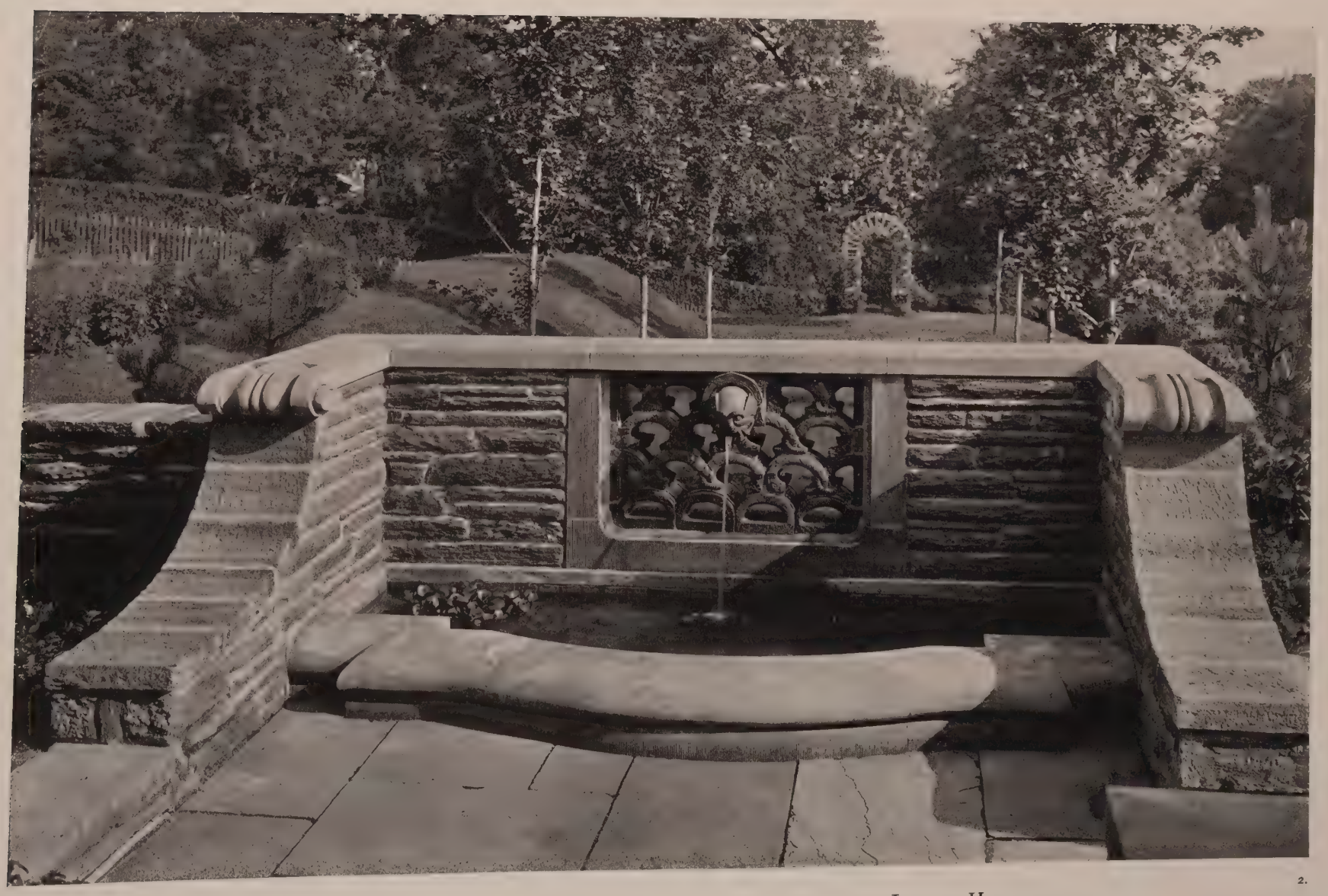
DESIGN FOR A SMALL MUSEUM
IN THE MAYA STYLE, OF THE RENAISSANCE PERIOD

BY GEORGE OAKLEY TOTTEN

ARCHITECT

1.

MASONIC TEMPLE.
A MODERN ADAPTATION OF THE MAYA STYLE.
GOOD IN COMPOSITION AND MIGHT HAVE BEEN STUNNING
IF CARRIED OUT IN COLOR.
MERIDA, YUCATAN.



2.

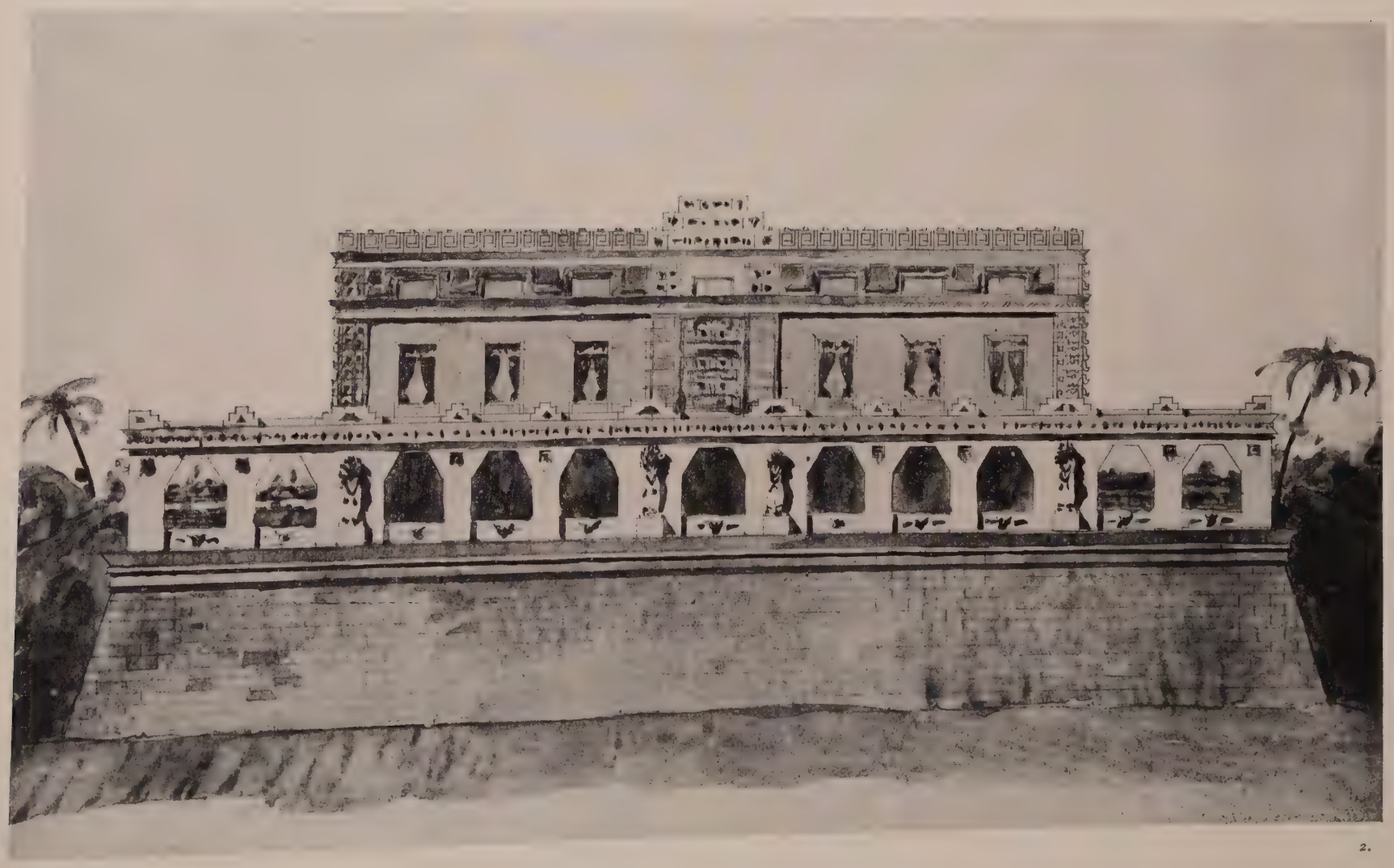
FOUNTAIN WITH ILLUMINATED TERRA COTTA GRILLE AND JAGUAR HEAD,
WITH QUETSAL FEATHERS ABOVE EYES.
INSPIRED BY MAYA MOTIVES.
ALBERT KELSEY, ARCHITECT.

1.

DECORATIVE PANEL IN COLORED TERRA COTTA, ABOUT 5x10 FEET

INSPIRED FROM BAS RELIEF IN TEMPLE OF THE FOLIATED CROSS, PALENQUE

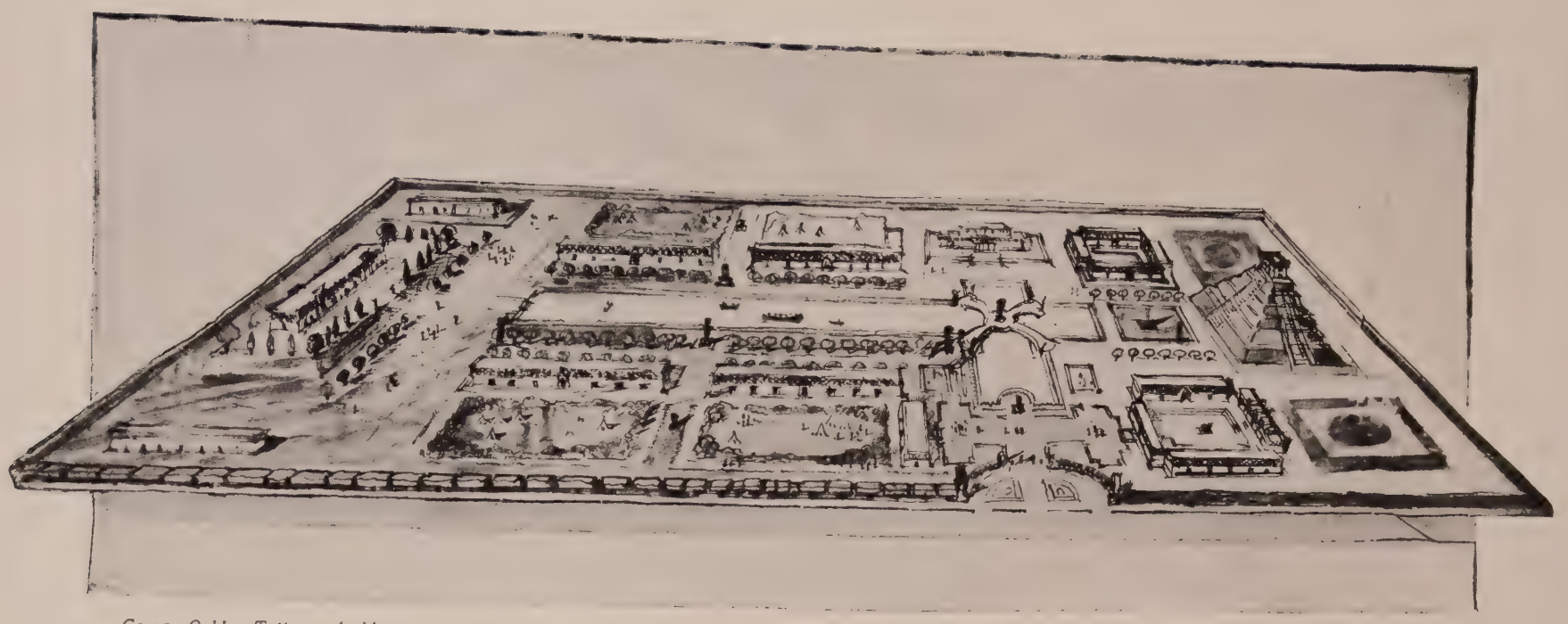
DESIGNED AND EXECUTED BY LEON V. SOLON.



2.

DESIGN FOR A COUNTRY HOUSE.

SUGGESTED BY MAYA PRECEDENT.



George Oakley Totten, Architect.

SKETCH FOR A MUSEUM OF AMERICAN INDIAN ART

The buildings would be in aboriginal American Architecture. The Maya style would predominate, with at least one example of Aztec, Inca, etc.

Classic Examples in each style, as the great pyramid in Chichen Itza or Tikal, the Governor's Palace at Uxmal, would be reproduced and still other buildings would be of original design in these styles. It is also suggested that groups of Indians could be brought from their Reservations for short periods of time to live in their own wigwams, and act as guardians of the grounds. These would always appear in their native costumes and would daily give exhibitions of their sports and national dances.

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